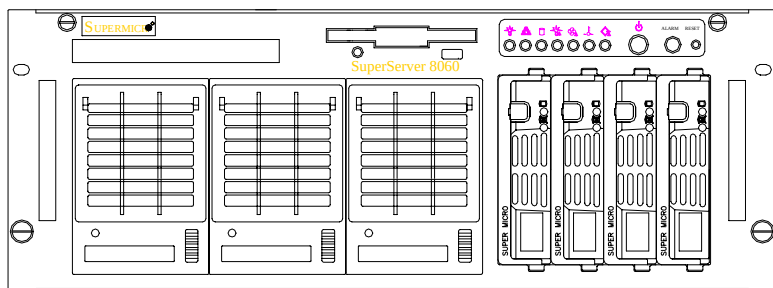


SUPER[®]

SUPERSERVER 8060



USER'S MANUAL

1.0

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 8060. Installation and maintenance should be performed by experienced technicians only.

The SuperServer 8060 is a high-end quad processor 4U rackmount server based on the SC860 4U rackmount server chassis and the S2QE6, a quad processor motherboard that supports up to four Pentium III/II Xeon processors and 16 GB SDRAM main memory.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the SUPER S2QE6 mainboard and the SC860 chassis, which make up the SuperServer 8060.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 8060 into a rack and check out the server configuration prior to powering up the system. If your server was ordered without processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

Refer here for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 8060.

Chapter 5: Advanced Motherboard Setup

Chapter 5 provides detailed information on the motherboard, including the locations and functions of connections, headers, jumpers, DIP switches and IRQs. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the motherboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the 4U rackmount server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SCSI or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

Appendix A: BIOS Error Beep Codes and Messages

Appendix B: Post Diagnostic Error Messages

Appendix C: List of Figures

Appendix D: System Specifications

Manual Organization

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Chapter 1

Introduction to the SuperServer 8060

1-1 Overview

The Supermicro SuperServer 8060 is a high-end quad processor, 4U rackmount server that features some of the most advanced technology currently available. The SuperServer 8060 is comprised of two main sub-systems: the SC860 4U rackmount chassis and the S2QE6 quad Pentium III/II Xeon processor mainboard. Please refer to our web site for information on operating systems that have been certified for use with the SuperServer 8060.

In addition to the mainboard and chassis, various hardware components may have been included with your SuperServer 8060, as listed below.

- Up to four (4) Pentium III Xeon™ processors*
- One (1) Memory Expansion Card (MEC) that supports up to 16 GB SDRAM main memory
- One (1) 1.44" floppy drive
- One (1) slim CD-ROM drive
- One (1) Supermicro CD containing various drivers and utilities
- One (1) Control Panel PCB
- Rackmount hardware (with screws):
 - Two (2) rack rail assemblies
 - Four (4) brackets for mounting the rack rails to the rack
- Two (2) CPU Dual Retention Modules (DRMs) with screws
- One (1) CPU fan shroud
- One (1) SCA backpanel
- Four (4) SCA SCSI drive carriers

- SCSI Accessories
 - One (1) internal and one (1) external 68-pin Ultra160 SCSI cable w/o active termination for SCA SCSI backplane
 - One (1) set of SCSI driver diskettes
 - One (1) SCSI manual
- Two (2) TMR-008 CPU slot terminator cards*
- Six (6) VRMs (Voltage Regulator Modules)

You should also have received this User's Manual and several Supermicro diskettes, which contains various drivers and utilities.

** Type and number depends upon the configuration ordered.*

1-2 Server Chassis Features

The SuperServer 8060 is a high-end, scaleable 4U rackmount server platform designed with today's most state-of-the-art features. The following is a general outline of the main features of the SC860 chassis.

System Power

A triple redundant power supply consisting of three 300W units to provide 600W of continuous power with 300W of backup. If any one of the three power units fail you will be notified by alarm and LED, and the backup unit will automatically activate. These are hot-plug units that can be replaced without powering down the system.

SCSI Subsystem

The SCSI subsystem supports 4 80-pin SCA Ultra160 SCSI hard drives. (Any standard 1" drives are supported. SCA = Single Connection Attachment.) The SCSI drives are connected to a SAF-TE compliant SCA backplane that provides power, bus termination and configuration settings. The SCSI drives are also hot-swap units. A RAID controller card can be used with the SCA backplanes to provide data security.

Note: The operating system you use must have RAID support to enable the hot-swap capability of the SCSI drives.

Control Panel

The SuperServer 8060's detailed control panel provides comprehensive system monitoring and control. LEDs indicate network activity, power supply failure, fan failure, fan status, SCSI drive activity and failure and SCA backplane overhear conditions. The control panel also includes a main power button, a system reset button and an alarm reset switch.

I/O Shield

The SC860 is a 4U rackmount, WTX form factor chassis. Its I/O shield provides seven motherboard expansion slots, one COM port (the other is internal), a parallel port, two USB ports, PS/2 mouse and keyboard ports, a video port and an Ethernet port. (See Figure 1-1.)

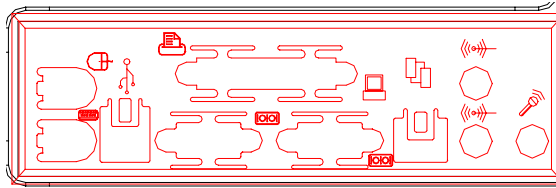


Figure 1-1. I/O Shield

Cooling System

The SC860 chassis has an innovative cooling design that includes four 9-cm hot-plug system cooling (intake) fans and two 9-cm hot-plug exhaust fans. All system fans (located between the drive bays and the motherboard) operate continuously. If one fails, an alarm is activated and the RPM of the remaining fans increase to compensate and maintain sufficient air-flow. A CPU air shroud is also included to concentrate cooling air around the processors, which generate the most heat.

1-3 Mainboard Features

At the heart of the SuperServer 8060 lies the S2QE6, a quad processor motherboard designed to provide maximum performance in a four-way system. Below are the main features of the S2QE6.

Processors

The S2QE6 supports Pentium III and II 400-700 MHz Xeon 100 MHz FSB processors in 1, 2, 3 and 4-way configurations. Future higher speed processors with a 100 MHz FSB are also supported. Please refer to the support section of our web site for a complete listing of supported processors (<http://www.supermicro.com/TechSupport.htm>).

Memory

The MEC (Memory Expansion Card) included with your S2QE6 has 16 DIMM slots that can support up to 16 GB of ECC registered DIMM. Module sizes of 128MB, 256MB, 512MB and 1 GB may be used to populate the MEC.

Onboard SCSI

Onboard SCSI is provided with an Adaptec AIC-7899 SCSI controller chip, which supports dual channel, Ultra160 SCSI at a burst throughput rate of 160 MB/sec for each channel. The S2QE6 provides three SCSI ports: two 68-pin LVD Ultra160 connectors (on channels A and B) and one 50-pin Legacy SCSI connector (shared with channel B.)

PCI Expansion Slots

The S2QE6 has a total of six PCI expansion slots that consist of two 64-bit 66 MHz slots and four 64/32-bit 33 MHz slots. The four 33 MHz slots are backward compatible with 32-bit PCI cards. These PCI slots run on two separate data buses to provide a total I/O bandwidth of 792 MB/sec.

ATI Rage XL PCI Graphics Controller

An onboard ATI graphics controller based on the Rage XL graphics chip is integrated into the S2QE6. This onboard graphics controller includes 8 MB of onboard memory and fully supports sideband addressing. This onboard graphics package provides a bandwidth of up to 512 MB/sec over a 32-bit graphics memory bus on the S2QE6.

Onboard Controllers/Ports

An onboard IDE controller supports one floppy drive and up to four UDMA/33 hard drives or ATAPI devices. Onboard I/O ports include two COM ports, a parallel port, two USB ports, PS/2 mouse and keyboard ports, a video (monitor) port and a 10/100 MB Ethernet port. The S2QE6 also has an onboard ATI graphics controller (see above).

Other Features

Other onboard features that promote system health include eight voltage monitors, a chassis intrusion header, auto-switching voltage regulators, chassis and CPU overheat sensors, virus protection and BIOS rescue.

1-4 Contacting Supermicro

Headquarters

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E-mail: sales@supermicro.nl
support@supermicro.nl (Technical Support)
rma@supermicro.nl (Customer Support)

Notes

Chapter 2

Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get your SuperServer 8060 up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your SuperServer 8060 system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a motherboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing the specific component.

2-2 Unpacking the SuperServer 8060

You should inspect the box the SuperServer 8060 was shipped in and note if it was damaged in any way. If the server itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the SuperServer 8060. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

2-3 Preparing for Setup

The box the SuperServer 8060 was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location:

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.



Warnings and Precautions!



Rack Precautions:

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

Server Precautions:

- Review the electrical and general safety precautions in Chapter 4.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges and voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot plug SCSI drives and power supply units to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

2-4 Installing the SuperServer 8060 into a Rack

This section provides information on installing the SuperServer 8060 into a rack unit. If the 8060 has already been mounted into a rack, you can skip ahead to Sections 2-5 and 2-6. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. The following is a guideline for installing the 8060 into a rack with the rack rails provided. You should also refer to the installation instructions that came with the rack unit you are using.

Identifying the Sections of the Rack Rails:

You should have received two rack rail assemblies with the SuperServer 8060. Each of these assemblies consist of three sections: an inner fixed chassis rail that secures to the 8060 (A), an outer fixed rack rail that secures directly to the rack itself (B), and a sliding rail guide (C) between the two, which should remain attached to the fixed rack rail. (See Figure 2-1, which shows the chassis rail 'A' already attached to the chassis).

The first thing you must do is to remove the fixed chassis rail (A) from each assembly. To do this, pull this inner rail out as far as possible - you should hear a "click" sound as a locking tab emerges from inside the rail assembly and locks the inner rail. Depress the locking tab to pull the inner rail completely out.

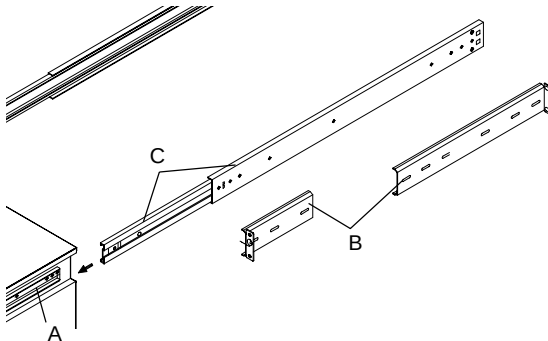


Figure 2-1. Identifying the Sections of the Rack Rails

Installing the Chassis Rails:

Position the fixed chassis rail sections you just removed along the side of the 8060 chassis making sure the five screw holes line up. Be aware that these two rails are left/right specific. Screw the rail securely to the side of the chassis (see Figure 2-2). Repeat this procedure for the other rail on the other side of the chassis.

Locking Tabs: As you have seen, both chassis rails have a locking tab, which serves two functions. The first is to lock the server into place when installed and pushed fully into the rack, which is its normal position. These tabs also lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing.

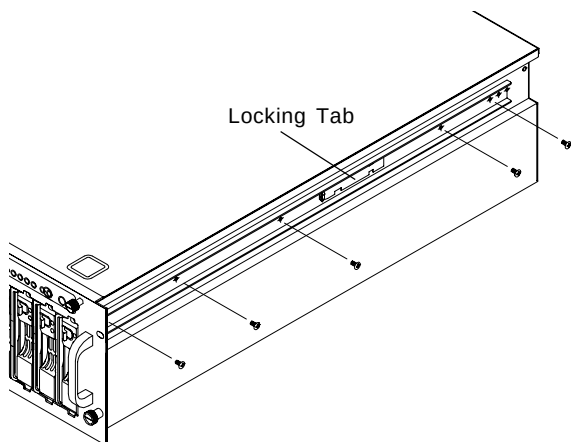


Figure 2-2. Installing the Chassis Rails

Installing the Rack Rails:

Determine where you want to place the SuperServer 8060 in the rack. (See Rack and Server Precautions in Section 2-3.) Position the fixed rack rail/sliding rail guide assemblies at the desired location in the rack, keeping the sliding rail guide facing the inside of the rack. Screw the assembly securely to the rack using the brackets provided. Attach the other assembly to the other side of the rack, making both are at the exact same height and with the rail guides facing inward (see Figure 2-3).

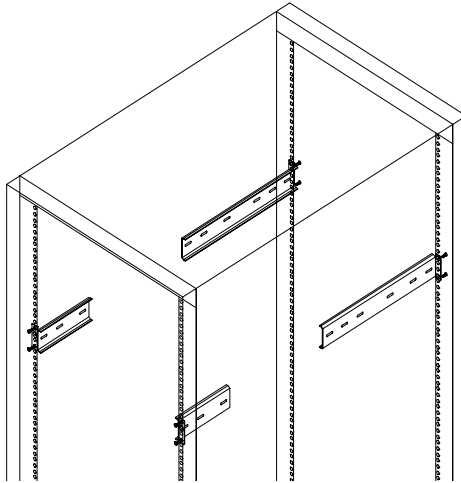


Figure 2-3. Installing the Rack Rails

Installing the Server Into the Rack:

You should now have rails attached to both the chassis and the rack unit. The next step is to install the server into the chassis. Do this by lining up the rear of the chassis rails with the front of the rack rails. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). See Figure 2-4 on the next page.

When the server has been pushed completely into the rack, you should hear the locking tabs "click". Finish by inserting and tightening the thumbscrews that hold the front of the server to the rack.

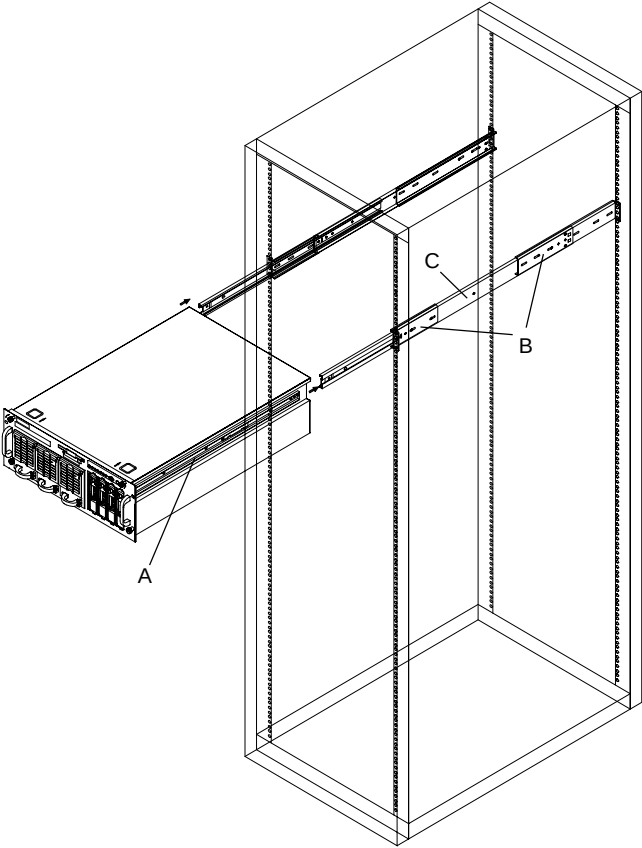


Figure 2-4. Installing the Server Into the Rack

2-5 Checking the Motherboard Setup

After you install the 8060 in the rack, you will need to open the unit to make sure the motherboard is properly installed and all the connections have been made.

1. Accessing the inside of the 8060 (see Figure 2-5):

First, release the retention screws that secure the unit to the rack. Next, release the two thumbscrews that secure the top cover to the chassis. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click"). There are two square recesses in the top cover to help you push the cover away from you until it stops. You can then lift the top cover from the chassis. You now have full access to the inside of the server.

2. Check the CPUs (processors):

The processors are enclosed in an air shroud. You should see one to four processors fully inserted into the system board. Each processor should have its own heatsink attached. See Section 5-4 for instructions on processor installation.

3. Verify the proper CPU core/bus ratio setting:

You need to verify that the CPU core/bus ratio as set with DIP Switch 1 matches the speed of your installed processors. This DIP Switch is defaulted to 5.5, which corresponds to 550 MHz processors running on a 100 MHz front side bus (FSB). If the setting is different or if you are using processors of a different speed, you may need to change this setting. (See Section 5-8 for setting the core/bus ratio with DIP Switch 1.)

4. Check the MEC:

The Memory Expansion Card (MEC) should be already installed. Make sure the MEC is fully seated in its slot and that its retention plate is screwed firmly to the chassis. For details on populating the MEC, refer to Section 5-5.

5. Installing add-on cards:

Install any add-on cards that you want added to the system. See Section 5-6 for details on installing PCI add-on cards.

6. Check all cable connections and airflow:

Make sure all power and data cables are properly and firmly connected and not blocking the airflow. See Section 5-3 for details on cable connections.

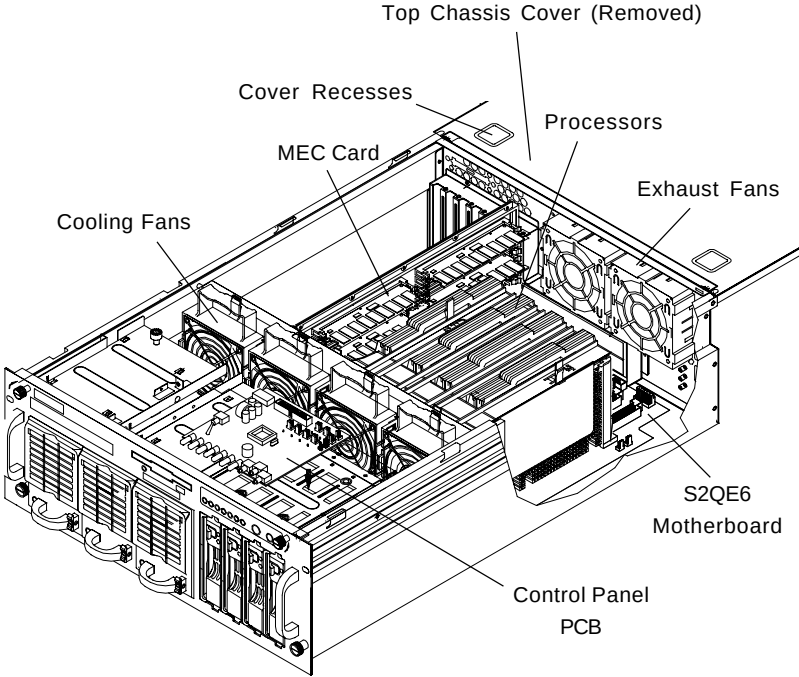


Figure 2-5. Accessing the Inside of the SuperServer 8060 (with air shroud removed and Control Panel PCB elevated)

2-6 Checking the Drive Bay Setup

Next, you should check to make sure the peripheral drives and the SCA drives and backplane have been properly installed and all connections have been made.

1. Accessing the drive bays:

All drives can be accessed from the front of the server. For servicing the CD-ROM and floppy drives, you will need to remove the top chassis cover. The SCSI disk drives can be installed and removed from the front of the chassis without removing the top chassis cover.

2. Installing a CD-ROM and floppy disk drives:

Refer to Section 6-4 if you need to reinstall a CD-ROM and/or floppy disk drive to the system.

3. Check the SCSI disk drives:

Depending upon your system's configuration, your system may have some SCSI drives already installed. If you need to install SCSI drives, please refer to Section 6-4.

4. Check the airflow:

Airflow is provided by four hot-swap input fans and two exhaust fans, all of which are 9-cm in size. An air shroud has been installed to direct sufficient cooling air to the processors, which generate the most heat. Also note that all power and data cables have been routed in such a way that they do not block the airflow generated by the fans.

5. Supplying power to the system:

The last thing you must do is supply power to the system. Plug all three power cords from the three power supply units into a high-quality power strip that offers protection from electrical noise and power surges. It is recommended that you use an uninterruptible power supply (UPS).

Notes

Chapter 3

System Interface

3-1 Overview

There are several LEDs on the control panel as well as others on the power supply units, the SCSI drive carriers and the motherboard to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. There are also three switches that allow you to take action based on the information provided by these LEDs. This chapter explains the meanings of all LED indicators and audible alarms and the appropriate response you may need to take.

3-2 Control Panel Switches

There are three push-button switches located on the front of the chassis. These are (in order from left to right) a power on/off switch, an alarm disable switch and a reset switch.



- **POWER:** This is the main power switch, which is used to apply or turn off the power supplied to the power supply units on the 8060.

ALARM



- **ALARM:** Depressing the alarm switch will disable the audible alarm, which is generated to notify you of chassis overheating or a fan/power supply failure. The LED indicating the cause of the alarm will remain illuminated after the audible alarm is disabled.

RESET



- **RESET:** The reset switch reboots the system.

3-3 Control Panel LEDs

The control panel located on the front of the SC860 chassis has seven LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.



- **Power:** Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.



- **NIC:** Indicates network activity on the system when flashing.



- **HDD:** Indicates IDE channel activity. On the SuperServer 8060, this light indicates CD-ROM drive activity when flashing.



- **PWR Fault:** Indicates a power supply failure. This should be accompanied by an audible alarm, which you can disable with the alarm switch on the control panel. Inspect the power supply units at the front left of the chassis. The unit with the red LED illuminated has failed. Refer to Section 6-5 for instructions on replacing the failed unit. Because the power

supplies are hot-plug units, you do not need to remove power from the system when replacing. (The third power supply unit is a backup that activates automatically to keep power supplied to the system.)



- **Fan Fail:** Indicates a system fan failure. This may be one or more of the four hot-swap intake fans or the two exhaust fans. A fan failure is accompanied by an audible alarm, which you can disable with the alarm switch on the control panel. When a fan stops working, all the other system fans will increase their RPM to compensate until the failed unit is replaced. (See Section 6-2 for more details.) Refer to Section 6-3 for instructions on replacing system fans. It is unnecessary to power down the system as these are hot-swap fans. **Note:** You must use the exact same brand and rating of fan for replacement. These can be obtained directly from Supermicro.



- **Overheat:** Indicates an overheat condition in the chassis. This may be caused by cables obstructing the airflow in the system, or the ambient room temperature being too warm. You should also check to make sure that the chassis cover is installed and that all fans are present and operating normally.



- **SCA Channel:** Indicates an overheat condition in the area of the SCA SCSI drives and backplane. This may be caused by cables obstructing the airflow in the system, or the ambient room temperature being too warm. You should also check to make sure that the chassis cover is installed and that all fans are present and operating normally.

3-4 SCSI Drive Carrier LEDs

Each SCSI drive carrier has two LEDs.

- **Green:** When illuminated, the green LED on the front of the SCSI drive carrier indicates drive activity. A connection to the SCSI SCA backplane enables this LED to blink on and off when that particular drive is being accessed.
- **Red:** When illuminated, the red LED on the front of the SCSI drive carrier indicates the drive has experienced a fault or has crashed. Please refer to Section 6-4 for instructions on replacing failed SCSI drives.

3-5 Power Supply LEDs

Each of the three separate power units that comprise the power supply has a single LED that can be illuminated either as green or red.

- **Green:** When green, the power unit has power applied to it and is operating normally.
- **Red:** A red LED is normal only when system power has been turned off. If the LED is red, it indicates that either (1) no power is being applied to that particular power unit or (2) that particular power unit has failed. First check to make sure the power cord for that unit is plugged into both the power unit and a grounded wall outlet/power strip. If the power cord is properly connected, not, refer to Section 6-5 for instructions on replacing the power supply unit.

3-6 Motherboard LED

There is only one LED on the motherboard. When illuminated, it indicates that system power is present on the motherboard. This LED is located at the lower right hand corner of the S2QE6 when installed in and viewed from the front of the rackmount chassis. This LED provides the same indication as the Power LED on the control panel.

Chapter 4

System Safety

4-1 Electrical Safety Precautions



Basic electrical safety precautions should be followed to protect yourself from harm and the SuperServer 8060 from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.
- Do not work alone when working with high voltage components.
- Power should always be disconnected from the system when removing or installing main system components, such as the motherboard, the MEC, memory modules and IDE and floppy drives. When disconnecting power, you should first power down the system with the operating system first and then unplug the power cords of all the power supply units in the system.
- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.
- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.
- Do not use mats designed to decrease static electrical discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.
- The power supply power cords must include a grounding plug and must be plugged into grounded electrical outlets.

- Motherboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery (located near the MEC and IDE#2 connectors) is installed upside down, which will reverse its polarities. This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

4-2 General Safety Precautions



Follow these rules to ensure general safety:

- Keep the area around the SuperServer 8060 clean and free of clutter.
- The SuperServer 8060 weighs approx. 74.8 lbs. (34 kg.) when fully loaded. When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.
- Place the chassis top cover any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.
- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into the one of the cooling fans.
- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.
- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

4-3 ESD Precautions



Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

Notes

Chapter 5

Advanced Motherboard Setup

This chapter covers the steps required to install the S2QE6 motherboard into the SC860 chassis, connect the data and power cables and install add-on cards. All motherboard jumpers and connections are also described. A layout and quick reference chart are on pages 5-12 and 5-13. Remember to completely close the chassis when you have finished working with the motherboard to better cool and protect the system.

Tools Required

The only tools you will need to install the S2QE6 into the chassis are a long and a short Philips screwdriver.

5-1 Handling the S2QE6 Motherboard

Static electrical discharge can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). Also note that the size and weight of the S2QE6 motherboard can cause it to bend if handled improperly, which may result in damage. To prevent the S2QE6 motherboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from static discharge.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its anti-static bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their anti-static bags when not in use.

- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

Unpacking

The motherboard is shipped in antistatic packaging to avoid static electrical damage. When unpacking the board, make sure the person handling it is static protected.

5-2 Motherboard Installation

This section explains the first step of physically mounting the S2QE6 into the SC860 chassis. Following the steps in the order given will eliminate the most common problems encountered in such an installation. To remove the motherboard, follow the procedure in reverse order.

1. Accessing the inside of the 8060 (see Figure 2-5):

First, release the two retention screws that secure the unit to the rack. Grasp the two handles on either side and pull the unit straight out. Next, release the two screws that secure the top cover to the chassis. Remove the top chassis cover by pushing forward on the cover recesses until it stops. Lift the cover from the chassis. You should now have full access to the inside of the server.

2. Installing metal standoffs and rubber feet:

With the chassis opened up, the motherboard tray is directly in front of you. First, check that the location of all the mounting holes on both the motherboard and the tray match. Refer to Figure 5-1 for mounting hole locations. Attach metal standoffs to the holes labeled "Q" on the motherboard tray. Make sure these metal standoffs either click in or are screwed in tightly. There are eight additional square metal standoffs that are required for mounting the DRMs (Dual Retention Modules), which should be preinstalled. Several square rubber "feet" must be applied to the motherboard tray to function as shock absorbers. Attach these feet to the small square outlines on the tray.

3. Check compatibility of motherboard ports and I/O shield:

The S2QE6 requires a chassis big enough to support a 13" x 18"

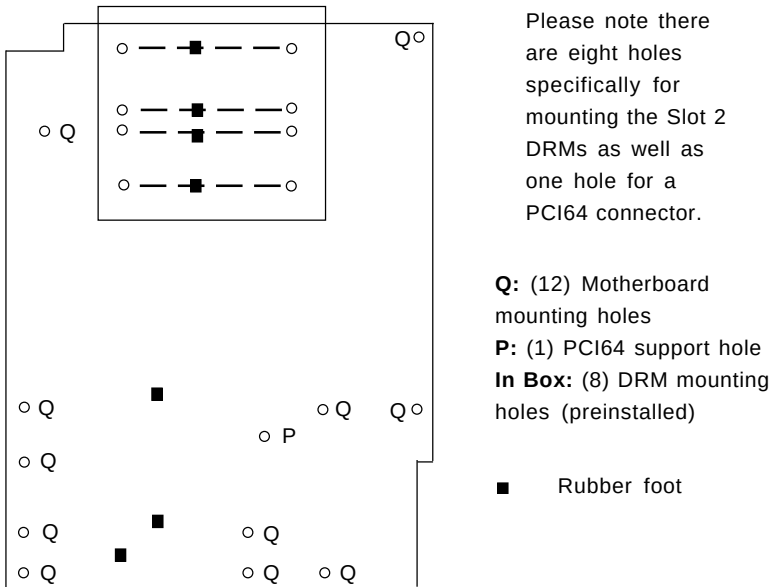


Figure 5-1. Mounting Holes on Motherboard (top view)

motherboard, such as Supermicro's SC860 4U rackmount. Make sure that the I/O ports on the motherboard properly align with their respective holes in the I/O shield at the back of the chassis.

4. Mounting the motherboard onto the motherboard tray:

Carefully mount the motherboard to the motherboard tray by aligning the board holes with the metal standoffs you just installed. Insert screws into all the mounting holes provided and tighten until snug. Do not use non-metal washers; metal screws provide an electrical contact to the motherboard, which grounds it to the chassis.

5-3 Connecting Cables

Now that the motherboard is installed, the next step is to connect the cables to the board. These include the data (ribbon) cables for the peripherals and front control panel, the power fail signal (PWR P) cable and the power cables.

Connecting Data Cables

The ribbon cables used to transfer data from the peripheral devices have been carefully routed to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). The following data cables (with their locations noted) should be connected. (See the layout on page 5-12 for connector locations.)

- IDE Device Cables (J13 and J14)
- Floppy Drive Cable (J15)
- SCSI Device Cables (JA1, JA3 and JA5)
- Control Panel Cable (JF1, see next page)
- Power Fail Signal Cable (PWR P)

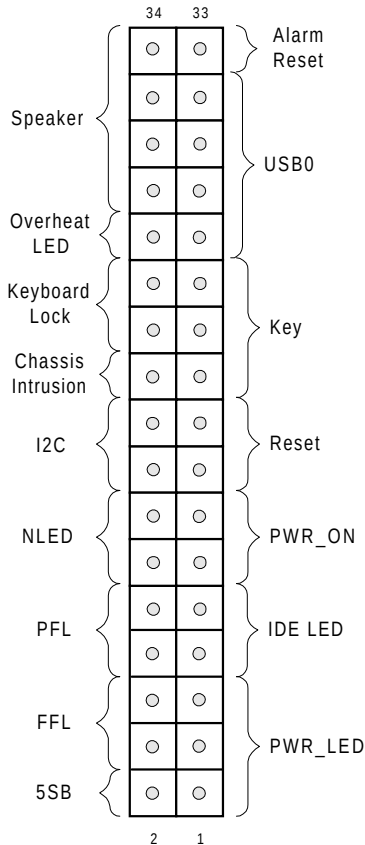
Connecting Power Cables

The S2QE6 has two primary power supply connectors: ATX Power #1 and ATX Power #2. You must connect both the primary *and* the secondary ATX power connectors to your power supply. See the layout on page 5-12 for connector locations.

Connecting the Control Panel

The JF1 header on the S2QE6 contains header pins for various control panel connectors. See Figure 5-2 for the locations of the speaker, overhear LED, keyboard lock, chassis intrusion, I2C, network activity LED, power fail, fan fail, 5v standby, power LED, IDE drive activity LED, power on LED, reset switch, USB0 and alarm reset headers. Note that even and odd numbered pins are on opposite sides of the connector. All JF1 wires have been bundled into a single ribbon cable to simplify this connection. Make sure the red wire plugs into pin 1 as marked on the board. The other end connects to JP9 of the Control Panel PCB board, located just behind the system status LEDs on the chassis. See pages 5-14 to 5-18 for details and pin descriptions.

Figure 5-2. Control Panel Connectors



JF1

5-4 Installing Processors and DRMs



Before installing the Pentium III/III Xeon processors, both DRMs (Dual Retention Modules) must be bolted through the motherboard and into the chassis to protect the processors from shock and vibration.

1. Mounting fans to the DRMs (optional):

If your chassis provides good cooling, adding DRM fans is not necessary (Supermicro DRMs are aerodynamically designed to make the airflow generated by the system fans sufficient for system cooling). If you want to add fans to the DRMs, mount them before attaching the DRMs to the motherboard. Add either two or four to each DRM - two should be enough in most cases.

2. Installing DRMs (Dual Retention Modules):

Regardless of how many processors you will be using, both DRMs must be installed. Position the DRMs as indicated in Figure 5-3, using their base pegs to align the mounting holes to those on the motherboard. Then insert the DRM mounting screws through the motherboard and into the motherboard tray, where they should be secured to the standoffs.

3. Installing handlebar caps on the Xeon processors:

When attaching the caps (top cross pieces) to function as handlebars for the Xeon processors, make sure the two mounting screw holes on the top of each cap face inward. You should test the configuration of the units before mounting the caps.

4. Securing the processors:

Beginning with the CPU1 slot, slide the processor(s) into the DRMs and let it rest in the motherboard's Slot 2 processor socket. Then insert the four DRM screws to the base of each DRM and secure the units by screwing them in firmly.

5. Empty processor slots:

Terminator cards (p/n TMR-008) should be installed in the processor slot(s) left empty in 1, 2 and 3-way configurations.

6. Installing the CPU air shroud:

An air shroud is included with the 8060 to intensify the amount of cooling air directed to the processor area of the motherboard, which is where the most heat is generated. This shroud has tabs that fit under the frame of the chassis to keep it secured.

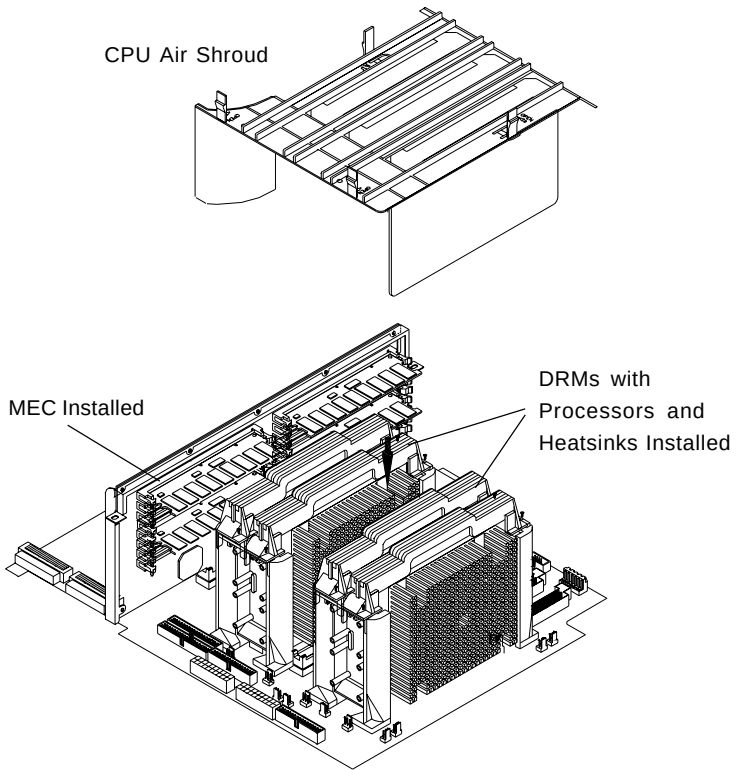


Figure 5-3. Installing the Motherboard Components

Removing the Pentium II/III Xeon Processors

To remove the Xeon processors from the motherboard, follow the installation process in reverse order.



When removing a Pentium II/III Xeon processor, avoid pressing down on the motherboard or any of its components.

5-5 Installing Memory in the MEC



CAUTION! Exercise extreme care when installing or removing DIMM modules to prevent any possible damage. The MEC must be populated in the manner described in Step 2 below.

Memory Support: The S2QE6 supports 128MB/256MB/512MB/ and 1 GB registered ECC DIMM memory modules.

1. Removing the MEC (Memory Expansion Card):

You should remove the MEC whenever installing or removing DIMMs. The MEC is attached to a retention plate with seven screws (five on the top and two on the bottom corners). Do not remove these. Instead, remove only the two screws that secure the MEC retention plate to the chassis. After removing the board, place it on an antistatic bag before inserting the DIMMs.

2. Populating the MEC:

Important: Because memory is accessed by a four-way interleaving scheme, you must install modules four at a time and in the order shown in Figure 5-4 and described here: If four DIMMs are to be installed, you must populate the four Bank0 slots. If eight are to be installed, you must populate the four Bank0 and the four Bank1 slots, and so on. All four DIMMs installed in a the same bank number (i.e. Bank0) must be the same brand, type, size and speed.

3. Inserting DIMMs:

Insert each DIMM module vertically into its slot. Pay attention to the two notches along the bottom of the module to prevent inserting the DIMM module incorrectly. Gently press down on the DIMM module until it snaps into place in the slot (see Figure 5-5). If you use too much pressure when inserting the DIMMs you may bend and damage the MEC.

4. Installing the MEC:

After populating the MEC, carefully install it back into its slot on the motherboard, making sure it is fully seated. Finish by tightening the two screws that secure the retention plate to the chassis.

Figure 5-4. Populating the MEC
(Four DIMM installation shown)

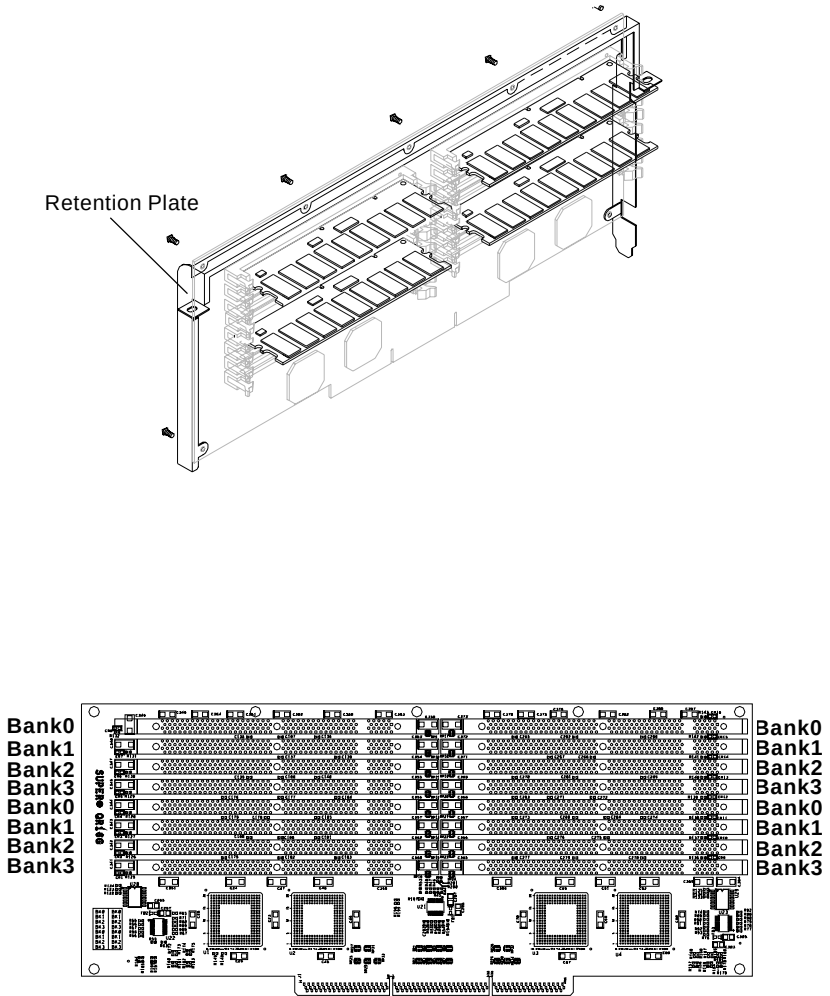
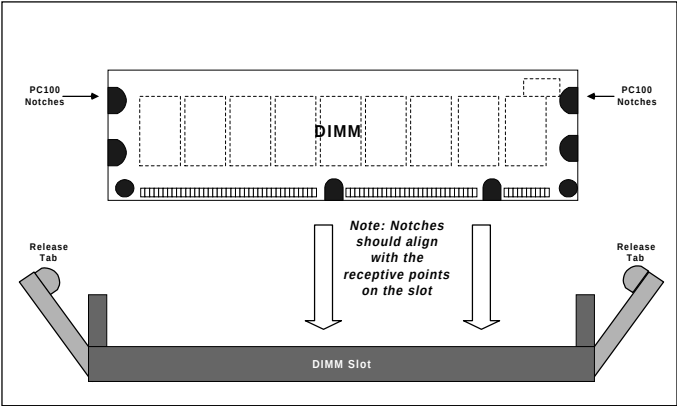


Figure 5-5. Side View of DIMM Installation into Slot



To Install: Insert module vertically and press down until it snaps into place. Pay attention to the two notches.

To Remove:

Use your thumbs to gently push both release tabs (located at both ends of the module) outward. This will release the DIMM from the slot.

5-6 Adding PCI Cards

1. 64-bit PCI slots:

The S2QE6 has six 64-bit PCI slots. Two of these are 66 MHz slots that are keyed to only accept 66 MHz, 3V PCI cards. The other four 64-bit, 66 MHz slots can also run at 33 MHz and are backward compatible with 32-bit cards.

2. PCI card installation:

You are now ready to install your PCI add-on cards. Make sure you choose the correct slot for the type of card you are installing (see step 1). First, remove the I/O shield for the proper slot. Then fully seat the card into the slot, pushing down with your thumbs evenly on both sides of the card. Finish by using a screw to secure the top of the card shield to the chassis. The I/O shields protect the motherboard and its components from EMI and aid in proper ventilation, so make sure there is a shield covering each slot.

Figure 5-6. Adding PCI Cards

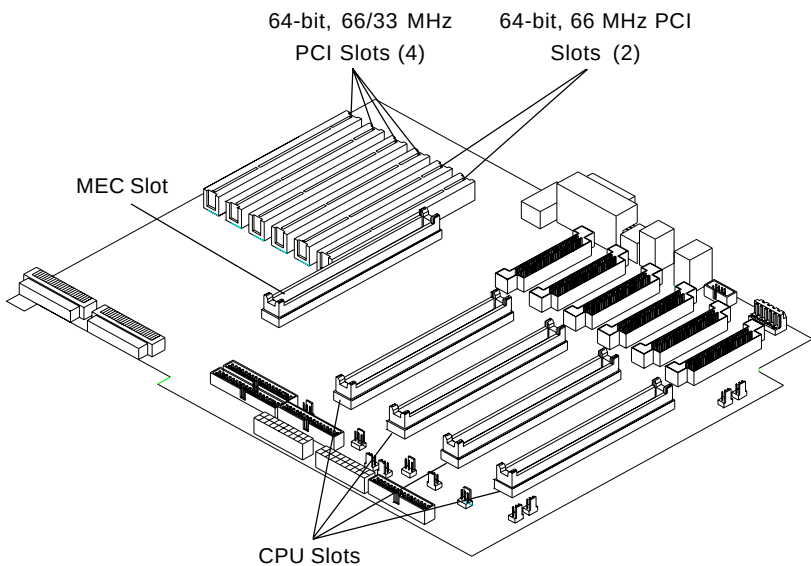
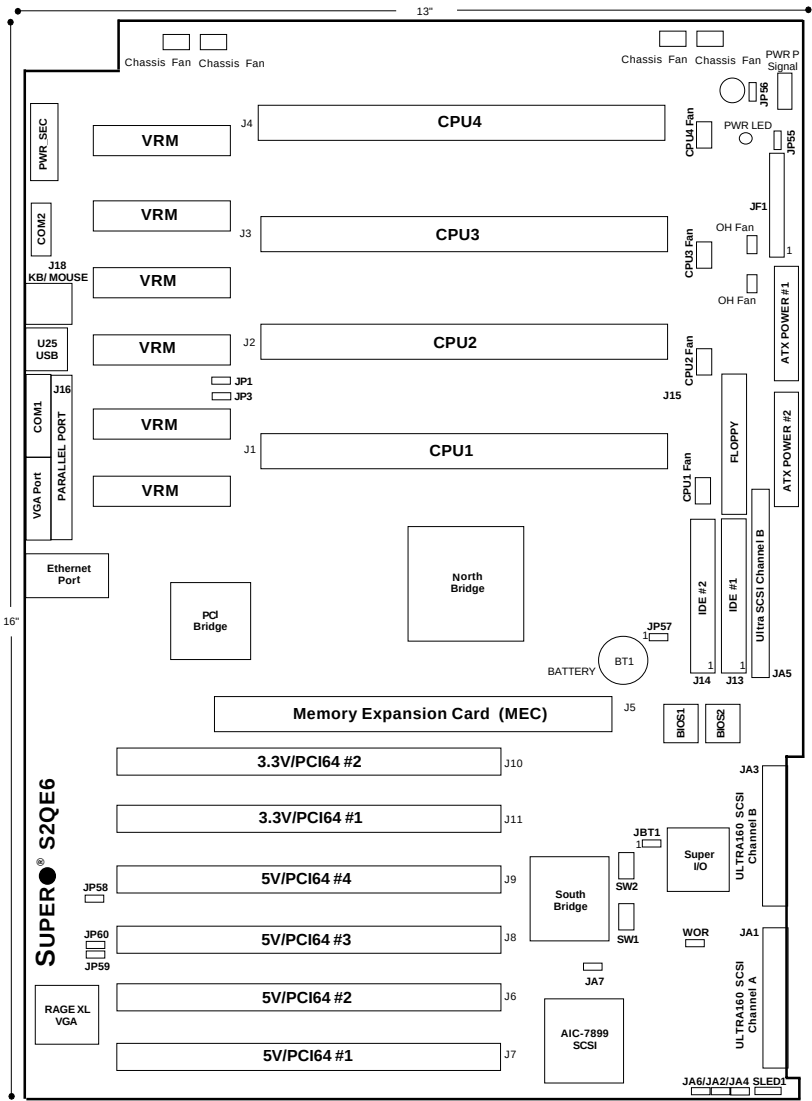


Figure 5-7. SUPER S2QE6 Layout
(not drawn to scale)



Also see the figure on page 5-24 for the locations of the I/O ports and 5-5 for the Control Panel (JF1) connectors.

<u>Jumper</u>	<u>Description</u>	<u>Default Setting</u>
JA2	LVD SCSI Ch A Term. (p. 5-23)	Open (Enabled)
JA4	LVD SCSI Ch B Term. (p. 5-23)	Open (Enabled)
JA6	50pin SCSI Ch B Term. (p. 5-23)	Open (Enabled)
JA7	Onboard SCSI Enable (p. 5-24)	Open (Enabled)
JBT1	CMOS Clear (p. 5-24)	Pin 1-2 (Normal)
JP1	Front Side Bus Speed (p. 5-21)	Closed (100 MHz)
JP3	Spread Spectrum Enable	Closed (Enabled)
JP55	3rd P/S Failure Alarm (p. 5-22)	Open (Disabled)
JP56	Buzzer Alarm (p. 5-22)	Closed (Enabled)
JP57	BIOS Select (p. 5-22)	Pin 1-2 (BIOS 1)
JP58	Onboard LAN (p. 5-23)	Open (Enabled)
JP59	Onboard VGA Enable	Pin 2-3 (Enabled)
JP60	Onboard VGA Interrupt Enable	Pin 2-3 (Enabled)

<u>DIP Switch</u>	<u>Description</u> (p. 5-20)	<u>Default Setting</u>
Switch 1	(1-4) CPU/Core Bus Ratio	Only 4 ON (5.5x)
Switch 2	Manufacturer's Setting	All OFF

<u>Connector</u>	<u>Description</u>
ATX Power#1	Primary ATX Power Connector #1 (p. 5-14)
ATX Power#2	Primary ATX Power Connector #2 (p. 5-14)
CHASSIS FAN	Chassis Fan Header (4 total) (p. 5-18)
COM1/2	COM1/2 Serial Port Conn/Header (p. 5-18)
CPU1/2/3/4 FAN	CPU 1/2/3/4 Fan Header (p. 5-18)
Ethernet Port	Ethernet Port (p. 5-19)
J1-J4	CPU Slots 1 through 4 (p. 5-6)
J13, J14	IDE Hard Disk Drive Connectors (p. 5-26)
J15	Floppy Disk Drive Connector (p. 5-25)
J16	Parallel Printer Port (p. 5-25)
J18	PS/2 Keyboard/Mouse (p. 5-19)
JA1	Ultra160 SCSI Connector (Ch A) (p. 5-27)
JA3	Ultra160 SCSI Connector (Ch B) (p. 5-27)
JA5	50-pin SCSI Connector (Ch B) (p. 5-26)
JF1	Control Panel (p. 5-5)
MEC	Memory Expansion Card Slot (p. 5-8)
OH FAN	Overheat Fan Header (2 total) (p. 5-18)
PWR P	Power Supply Fail Signal (p. 5-20)
PWR_SEC	Secondary ATX Power Connector (p. 5-14)
SLED	SCSI LED Indicator (p. 5-20)
U25	Universal Serial Bus Ports (p. 5-19)
VGA	Graphics (monitor) Port
WOR	Wake-on-Ring Header (p. 5-19)

5-7 Connector Definitions

Power Supply Connectors

The S2QE6 has two primary power supply connectors: ATX POWER #2 and ATX POWER #2. You should connect power to both of these two primary connectors. See Table 5-1 for pin definitions.

Table 5-1
ATX Power Supply Connector
Pin Definitions (ATX PWR #1, ATX PWR #2)

Pin Number	Definition	Pin Number	Definition
1	3.3V	11	3.3V
2	3.3V3	12	-12V
3	Ground	13	Ground
4	5V	14	PS-ON
5	Ground	15	Ground
6	5V	16	Ground
7	Ground	17	Ground
8	PW-OK	18	-5V
9	5VSB	19	5V
10	12V	20	5V

Secondary Power Connector

Use of the secondary power connector (PWR_SEC) is recommended when a heavy load of peripherals has been added to the motherboard. *Note: Be sure to use a 6-pin connector and check the power supply layout before attaching it.* See Table 5-2 for pin definitions.

Table 5-2
Secondary Power Connector
(PWR_SEC)

Pin Number	Definition
1	Ground
2	Ground
3	Ground
4	+3.3V
5	+3.3V
6	+5V (keyed)

Power LED

The Power LED connection is located on pins 1, 3 and 5 of JF1. See Table 5-3 for pin definitions and Figure 5-2 for pin locations.

Table 5-3
PWR_LED Pin
Definitions (JF1)

Pin Number	Definition
1	+5V
3	Key
5	GND

Fan Fail LED (FFL)

The Fan Fail LED connection is located on pins 2 and 4 of JF1. See Table 5-4 for pin definitions and Figure 5-2 for pin locations.

Table 5-4
Fan Fail LED
Pin Definitions
(JF1)

Pin Number	Definition
4	+5V
6	Ground

IDE LED

The IDE Drive LED connection is located on pins 7 and 9 of JF1. This will send an indication of IDE disk activity to the front control panel. See Table 5-5 for pin definitions and Figure 5-2 for pin locations.

Table 5-5
IDE_LED Pin
Definitions
(JF1)

Pin Number	Definition
7	+5V
9	HD Active

Power Fail LED (PFL)

The Power Fail LED connection is located on pins 8 and 10 of JF1. See Table 5-6 for pin definitions and Figure 5-2 for pin locations.

Table 5-6
Power Fail LED
Pin Definitions
(JF1)

Pin Number	Definition
8	+5V
10	Ground

PWR_ON

The PWR_ON connection is located on pins 11 and 13 of JF1. Momentarily contacting both pins will power on/off the system (based on the power management scheme of your operating system). See Table 5-7 for pin definitions and Figure 5-2 for pin locations.

Table 5-7
PWR_ON Connector
Pin Definitions
(JF1)

Pin Number	Definition
11	PW_ON
13	Ground

NIC_LED

The Network Interface Controller LED connection is located on pins 12 and 14 of JF1. This header is used to display network activity. See Table 5-8 for pin definitions and Figure 5-2 for pin locations.

Table 5-8
NIC_LED Pin
Definitions
(JF1)

Pin Number	Definition
12	+5V
14	GND

Reset

The Reset connection is located on pins 15 and 17 of JF1. This connector attaches to the hardware reset switch on the computer chassis. See Table 5-9 for pin definitions and Figure 5-2 for pin locations.

Table 5-9
Reset Pin
Definitions
(JF1)

Pin Number	Definition
15	Reset
17	Ground

Chassis Intrusion (CI)

A Chassis Intrusion connection is located on pin 20 of JF1. If a chassis intrusion condition has been detected (activated when the top cover of the chassis is removed), a message will be sent to notify the system administrator. See Table 5-10 for pin definitions and Figure 5-2 for pin locations.

Note: An extra chassis intrusion header is provided at JP52.

Table 5-10
Chassis Intrusion (CI)
Pin Definitions (JF1)

Pin Number	Definition
20	Intrusion Input

Keyboard Lock

The Keyboard Lock connection is located on pins 22 and 24 of JF1. See Table 5-11 for pin definitions and Figure 5-2 for pin locations.

Table 5-11
Keyboard Lock
Pin Definitions
(JF1)

Pin Number	Definition
22	Kybd Inhibit
24	GND

Extra Universal Serial Bus Connection (USB0)

An additional connection for USB0 is included on pins 25, 27, 29 and 31 of JF1 for front side USB access. You cannot have devices connected to both this and the back side connector at U25. See Table 5-12 for pin definitions and Figure 5-2 for pin locations. You will need a USB cable (not included) to use this connection.

Table 5-12
USB0 Pin
Definitions (JF1)

Pin Number	Definition
25	+5V
27	PO-
29	PO+
31	Ground

Overheat LED (OH)

Connect an LED to the OH connection on pins 25 and 26 of JF1 to provide advanced warning of chassis overheating. Refer to Table 5-13 for pin definitions and Figure 5-2 for pin locations.

Table 5-13
Overheat LED(OH)
Pin Definitions
(JF1)

Pin Number	Definition
25	GND
26	OH Input

Speaker

The speaker connection is located on pins 28, 30, 32 and 34 of JF1. See Table 5-14 for pin definitions and Figure 5-2 for pin locations.

Table 5-14
Speaker
Connector
Pin Definitions
(JF1)

Pin Number	Definition
28	Power
30	NC
32	NC
34	Data

Alarm Reset

Pin 33 of JF1 provides a connection for a switch to disable the system's audible alarm, which indicates either a chassis overheat condition, a power supply failure or a fan failure. The alarm reset switch will only disable the audible alarm; the alarm LED corresponding to the alarm will remain illuminated until corrective actions have been taken. See Table 5-15 for pin definitions and Figure 5-2 for pin locations.

Table 5-15
Alarm Reset Switch
Pin Definitions (JF1)

Pin Number	Definition
33	Alarm Input

Fan Headers*

There are several fan headers on the S2QE6 to provide cooling for various components. In addition to one fan header for each processor, there are two overheat and four chassis fan headers. See the motherboard layout on page 5-10 for locations. Refer to Table 5-16 for pin definitions. **Note:** The maximum current limitation for the onboard fans is 0.35 amps for each, not to exceed 1.2 amps for any group of four fans (i.e. the four CPU fans or the four chassis fans).

Table 5-16
Fan Header Pin Definitions
(CPU, CHASSIS and OH FANS)

Pin Number	Definition
1	Ground (black)
2	+12V (red)
3	Tachometer

* Caution: These fan headers are DC power.

Serial Ports

Serial connector COM1 is located below the parallel port (see Figure 5-8). COM2 is a header located on the motherboard near the mouse/keyboard port. See Table 5-17 for pin definitions.

Table 5-17
Serial Port Pin Definitions
(COM1, COM2)

Pin Number	Definition	Pin Number	Definition
1	DCD	6	CTS
2	DSR	7	DTR
3	Serial In	8	RI
4	RTS	9	Ground
5	Serial Out	10	NC

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located on J18. See Table 5-18 for pin definitions. (The mouse port is above the keyboard port. See Figure 5-8.)

Table 5-18
PS/2 Keyboard
and Mouse Port
Pin Definitions
(J18)

Pin Number	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

Universal Serial Bus (USB)

Two Universal Serial Bus connectors are located on U25. USB0 is the bottom connector and USB1 is the top connector.

Note: USB0 is shared with pins 25, 27, 29 and 31 of JF1 (see page 5-17). Only one of these two connections may be used at one time.

USB0/USB1 Ports



Ethernet Port

An Ethernet port is located beside the COM2 port on the I/O backplane. This port accepts RJ45 type cables. Two LEDs indicate a successful connection (yellow) and activity (green).

RJ45 Ethernet Port



Wake-On-Ring

The Wake-on-Ring header is designated WOR. This function allows your computer to receive and be "woken up" by an incoming call when in the suspend state. Refer to Table 5-19 for pin definitions. The S2QE6 meets the PCI 2.2 standard, which provides the PME function to support WOR and WOL. You must also have a WOR card and cable to use WOR.

Table 5-19
Wake-on-Ring Pin
Definitions (WOR)

Pin Number	Definition
1	Ground
2	Wake-up

PWR P Header

A four-pin connector from the power supply connects to the PWR P header on the motherboard to notify you in the event of a power supply failure. If your system does not have three power supply units, you should disable this with JP55 to prevent false alarms. See Table 5-20 for the pin definitions of the PWR P header. (The power supplies are numbered from top to bottom.)

Table 5-20
PWR P Header Pin
Definitions

Pin Number	Definition
1	P/S1 signal
2	P/S2 signal
3	P/S3 signal
4	Reset

SLED (SCSI LED) Indicator

The SLED connector is used to provide an LED indication of SCSI activity. Refer to Table 5-21 for connecting the SCSI LED.

Table 5-21
SLED (SCSI LED) Pin
Definitions

Pin Number	Definition
1	Positive
2	Negative
3	Negative
4	Positive

5-8 DIP Switch Settings

DIP Switch 1:
Core/Bus Ratio

Two DIP Switches labeled SW1 and SW2 are located on the S2QE6. Each has four individual switches. SW1 is used to set the core/bus ratio. The example on the right will show you which CPU

Table 5-22
CPU Core/Bus Ratio Selection
(DIP Switch1)

CPU Core/ Bus Ratio	SW1 #4	SW1 #3	SW1 #2	SW1 #1
2.0	ON	ON	ON	ON
3.0	ON	ON	OFF	ON
4.0	ON	OFF	ON	ON
4.5	ON	OFF	ON	OFF
5.0	ON	OFF	OFF	ON
5.5	ON	OFF	OFF	OFF
6.0	OFF	ON	ON	ON
6.5	OFF	ON	ON	OFF
7.0	OFF	ON	OFF	ON
7.5	OFF	ON	OFF	OFF
8.0	OFF	OFF	ON	ON

550 MHz = 100 MHz x 5.5

CPU Speed = Bus Freq. x Ratio

Core/Bus Ratio to use. The general rule is to divide the CPU speed by the bus speed (100 MHz for the S2QE6). If you have a 550 MHz CPU, dividing it by 100 will give you a CPU Core/BUS Ratio of 5.5. After determining the CPU Core/Bus Ratio, refer to Table 5-22 for the correct settings of DIP Switch 1.

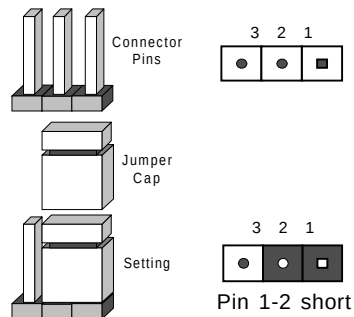
DIP Switch 2

Only DIP Switch 1 is functional at this time. DIP Switch 2 should be left as set by the manufacturer.

5-9 Jumper Settings

Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout pages for jumper locations.



Front Side Bus Speed

The JP1 jumper sets the FSB speed. Since the S2QE6 only runs at a 100 MHz front side bus speed, you do not need to change this setting. Table 5-23 describes the jumper settings.

Table 5-23
Front Side Bus Speed
Jumper Settings (JP1)

Jumper Position	Definition
OFF	Auto
ON	100 MHz

* Note: The Auto setting allows the CPU to set the speed.

Power Supply Failure Alarm Enable/Disable

The system will notify you in the event of a power supply failure. You need to have the PWR P cable connected to use this feature. The default setting is disabled. See Table 5-24 for jumper settings.

Table 5-24
Power Supply Failure
Alarm Enable/Disable
Jumper Settings (JP55)

Jumper Position	Definition
Open	Disabled
Closed	Enabled

Overheat Buzzer Alarm Enable/Disable

JP56 gives you the option of disabling the audio alarm signal that notifies you of power failure, fan failure and overheat conditions. If disabled, you will still be notified of such conditions by the LED corresponding to the fault. The default setting is enabled. See Table 5-25 for jumper settings.

Table 5-25
Overheat Alarm
Enable/Disable
Jumper Settings (JP56)

Jumper Position	Definition
Open	Disabled
Closed	Enabled

BIOS Select

The S2QE6 has two BIOS chips to provide a backup if one becomes corrupted. (Switching from one BIOS chip to the other must be done manually.) The setting of jumper JP57 determines which of the two BIOS chips will be used. The Primary BIOS chip is the default setting. See Table 5-26 for jumper settings.

Table 5-26
BIOS Select
Jumper Settings (JP57)

Jumper Position	Definition
1-2	Primary BIOS
2-3	Secondary BIOS

Onboard LAN/NIC Enable/Disable

Use jumper JP58 to enable or disable the onboard LAN or NIC (Network Interface Card) on your motherboard. See Table 5-27 for jumper settings.

Table 5-27
Onboard LAN/NIC
Enable/Disable
Jumper Settings (JP58)

Jumper Position	Definition
Open	Enabled
Closed	Disabled

LVD Channel A SCSI Termination Enable/ Disable

Jumper JA2 allows you to enable or disable termination for the LVD Channel A SCSI connector. The normal (default) position is open to enable SCSI termination. See Table 5-28 for jumper settings.

Table 5-28
LVD CH A SCSI
Termination
Jumper Settings (JA2)

Jumper Position	Definition
Open	Enabled
Closed	Disabled

LVD Channel B SCSI Termination Enable/ Disable

Jumper JA4 allows you to enable or disable termination for the LVD Channel B SCSI connector. The normal (default) position is open to enable SCSI termination. See Table 5-29 for jumper settings.

Table 5-29
LVD CH B SCSI
Termination
Jumper Settings (JA4)

Jumper Position	Definition
Open	Enabled
Closed	Disabled

50-pin Legacy Channel B SCSI Termination Enable/ Disable

Jumper JA6 allows you to enable or disable termination for the 50-pin Channel B SCSI connector. The normal (default) position is open to enable SCSI termination. See Table 5-30 for jumper settings.

Table 5-30
50-pin Legacy CH B
SCSI Termination
Jumper Settings (JA6)

Jumper Position	Definition
Open	Enabled
Closed	Disabled

SCSI Enable/Disable

Jumper JA7 allows you to enable or disable all onboard SCSI. The normal (default) position is open to enable SCSI operation. See Table 5-31 for jumper settings.

Table 5-31
SCSI Enable/Disable
Jumper Settings (JA7)

Jumper Position	Definition
Open	Enabled
Closed	Disabled

CMOS Clear

Refer to Table 5-32 for setting JBT1 to clear CMOS. Always remove the AC power cord from the system before clearing CMOS.

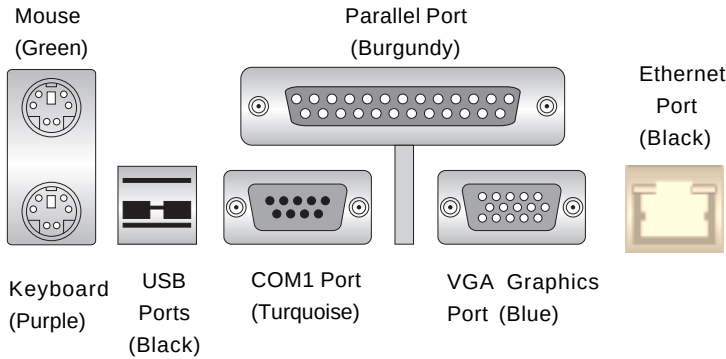
Table 5-32
CMOS Clear Jumper Settings
(JBT1)

Jumper Position	Definition
1-2	Normal
2-3	CMOS Clear

5-10 Port/Control Panel Connector Locations

The I/O ports on the S2QE6 are color coded in conformance with the PC 99 specification. These should be the last connections you make on the motherboard before you can apply power. See Figure 5-8 below for the colors and locations of the various I/O ports.

Figure 5-8. I/O Port Locations and Definitions



Note: COM2 Port is a header on the motherboard, located near the mouse/keyboard ports.

5-11 Parallel Port, Floppy/Hard Disk Drive and SCSI Connections

Use the following information to connect the floppy and hard disk drive cables.

- The floppy disk drive cable has seven twisted wires.
- A red mark on a wire typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

Table 5-33
Parallel (Printer) Port Pin Definitions
(J16)

Pin Number	Function	Pin Number	Function
1	Strobe-	2	Auto Feed-
3	Data Bit 0	4	Error-
5	Data Bit 1	6	Init-
7	Data Bit 2	8	SLCT IN-
9	Data Bit 3	10	GND
11	Data Bit 4	12	GND
13	Data Bit 5	14	GND
15	Data Bit 6	16	GND
17	Data Bit 7	18	GND
19	ACK	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	NC

Parallel Port Connector

The parallel port is located on J16 and requires a 26-pin ribbon cable for operation. See Table 5-33 for pin definitions.

Floppy Connector

The floppy connector is located on J15 and requires a 34-pin ribbon cable for operation. See Table 5-34 for pin definitions.

Table 5-34
Floppy Connector Pin Definitions (J15)

Pin Number	Function	Pin Number	Function
1	GND	2	FDHDI
3	GND	4	Reserved
5	Key	6	FDEDI
7	GND	8	Index-
9	GND	10	Motor Enable
11	GND	12	Drive Select B-
13	GND	14	Drive Select A-
15	GND	16	Motor Enable
17	GND	18	DIR-
19	GND	20	STEP-
21	GND	22	Write Data-
23	GND	24	Write Gate-
25	GND	26	Track 00-
27	GND	28	Write Protect-
29	GND	30	Read Data-
31	GND	32	Side 1 Select-
33	GND	34	Diskette

IDE Connectors

There are no jumpers to configure the onboard IDE connectors J13 and J14. Refer to Table 5-35 for pin definitions.

Table 5-35
IDE Connector Pin Definitions
(J13, J14)

Pin Number	Function	Pin Number	Function
1	Reset IDE	2	GND
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	GND	20	Key
21	DRQ3	22	GND
23	I/O Write-	24	GND
25	I/O Read-	26	GND
27	IOCHRDY	28	BALE
29	DACK3-	30	GND
31	IRQ14	32	IOCS16-
33	Addr 1	34	GND
35	Addr 0	36	Addr 2
37	Chip Select 0	38	Chip Select 1-
39	Activity	40	GND

50-pin Legacy SCSI Connector

Refer to Table 5-36 for pin definitions of the 50-pin Legacy SCSI connector located at JA5.

Table 5-36
50-pin Legacy SCSI Connector Pin Definitions
(JA5)

Pin Number	Function	Pin Number	Function
1	GND	26	-DB (0)
2	GND	27	-DB (1)
3	GND	28	-DB (2)
4	GND	29	-DB (3)
5	GND	30	-DB (4)
6	GND	31	-DB (5)
7	GND	32	-DB (6)
8	GND	33	-DB (7)
9	GND	34	-DB (P)
10	GND	35	GND
11	GND	36	GND
12	Reserved	37	Reserved
13	Open	38	Termpwr
14	Reserved	39	Reserved
15	GND	40	GND
16	GND	41	-ATN
17	GND	42	GND
18	GND	43	-BSY
19	GND	44	-ACK
20	GND	45	-RST
21	GND	46	-MSG
22	GND	47	-SEL
23	GND	48	-C/D
24	GND	49	-REQ
25	GND	50	-I/O

Ultra160 SCSI Connectors

Refer to Table 5-37 for pin definitions for the Ultra160 SCSI connectors located at JA1 and JA3.

Table 5-37
68-pin Ultra160 SCSI Connectors (JA1, JA3)

Connector Contact Number	Signal Names	Connector Contact Number	Signal Names
1	+DB(12)	35	-DB(12)
2	+DB(13)	36	-DB(13)
3	+DB(14)	37	-DB(14)
4	+DB(15)	38	-DB(15)
5	+DB(P1)	39	-DB(P1)
6	+DB(0)	40	-DB(0)
7	+DB(1)	41	-DB(1)
8	+DB(2)	42	-DB(2)
9	+DB(3)	43	-DB(3)
10	+DB(4)	44	-DB(4)
11	+DB(5)	45	-DB(5)
12	+DB(6)	46	-DB(6)
13	+DB(7)	47	-DB(7)
14	+DB(P)	48	-DB(P)
15	GROUND	49	GROUND
16	DIFFSENS	50	GROUND
17	TERMPWR	51	TERMPWR
18	TERMPWR	52	TERMPWR
19	RESERVED	53	RESERVED
20	GROUND	54	GROUND
21	+ATN	55	-ATN
22	GROUND	56	GROUND
23	+BSY	57	-BSY
24	+ACK	58	-ACK
25	+RST	59	-RST
26	+MSG	60	-MSG
27	+SEL	61	-SEL
28	+C/D	62	-C/D
29	+REQ	63	-REQ
30	+I/O	64	-I/O
31	+DB(8)	65	-DB(8)
32	+DB(9)	66	-DB(9)
33	+DB(10)	67	-DB(10)
34	+DB(11)	68	-DB(11)

5-12 IRQs

Some PCI bus mastering devices share IRQs (Interrupt Requests) without performance penalties. See Table 5-37 for details on shared IRQs.

Table 5-37. IRQs

64-bit/33 MHz PCI#1 (J7) shares IRQ0 with the onboard SCSI. 64-bit/33 MHz PCI#2 (J6) has a dedicated IRQ. 64-bit/33 MHz PCI#3 (J8) has a dedicated IRQ. 64-bit/33 MHz PCI#4 (J9) has a dedicated IRQ. 64-bit/66 MHz PCI#1 (J11) has a dedicated IRQ. 64-bit/66 MHz PCI#2 (J10) has a dedicated IRQ. The onboard LAN has a dedicated IRQ. The onboard graphics has a dedicated IRQ.
--

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC860 chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

Tools Required

The only tool you will need to install components and perform maintenance is a Philips screwdriver.

6-1 Static-Sensitive Devices

Static electrical discharge can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from static discharge.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its anti-static bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their anti-static bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

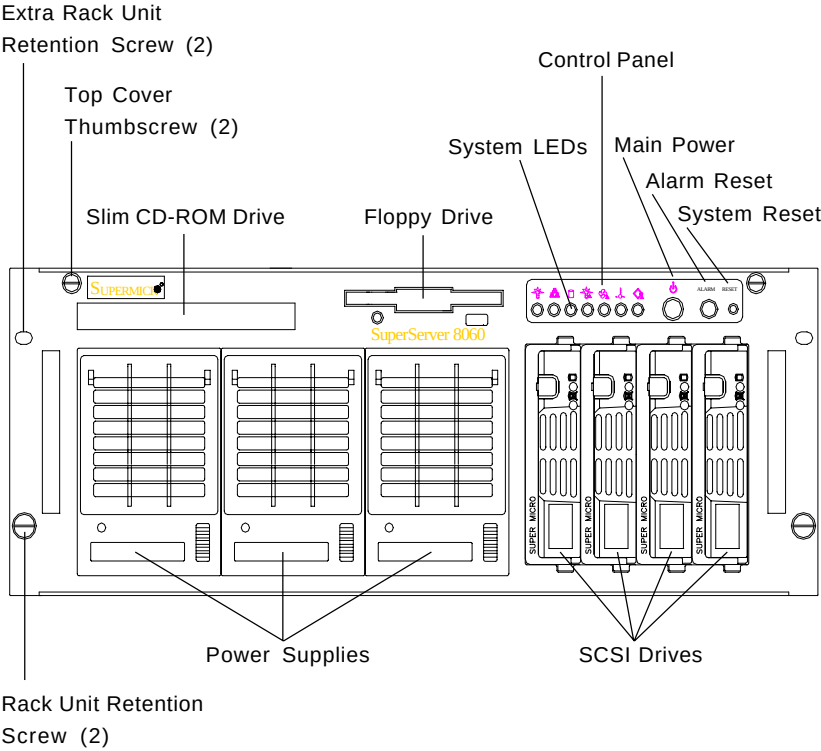


Figure 6-1. Chassis Front View

6-2 Control Panel

The control panel (located on the front of the chassis) must be connected to the JF1 connector on the motherboard to provide you with system status and alarm indications. A ribbon cable has bundled these wires together to simplify the connection. Connect the cable from JF1 on the motherboard (making sure the red wire plugs into pin 1) to JP9 on the Control Panel PCB (printed circuit board). Pull all excess cabling out of the airflow path. The LEDs inform you of system status. See Chapter 3 System Interface for details on the LEDs and the control panel switches. Figure 6-2 shows the connections, jumpers and indicators located on the control panel PCB. Details on JF1 can be found in the Advanced Motherboard Installation chapter.

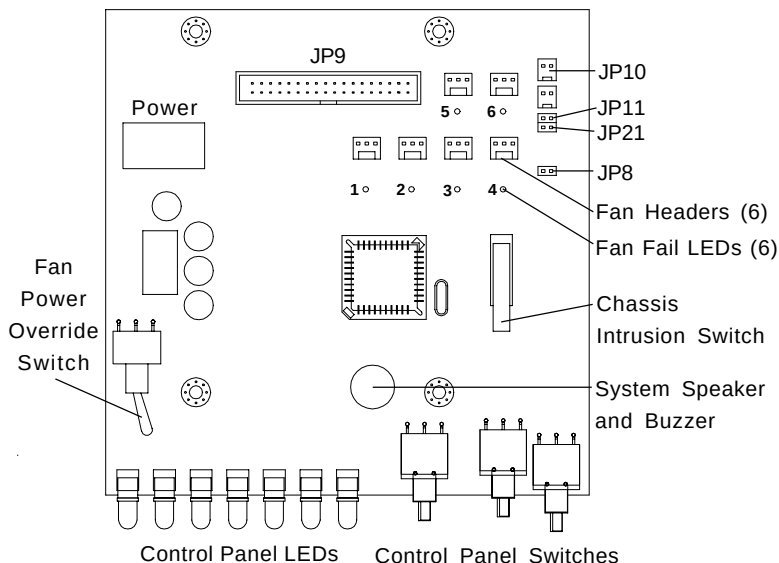


Figure 6-2. Control Panel PCB

Fan Headers: (Fan designations are provided on the PCB)

FAN1 cools the I/O section of the chassis

FAN2 cools the AGP Pro and memory areas

FAN3 directs cooling air to CPU1 and CPU2

FAN4 directs cooling air to CPU3 and CPU4

FAN5 + FAN6 are exhaust fans (FAN5 is on the right when viewed from the rear)

Fan LEDs: The red LEDs by each fan header turn on when the fan it corresponds to has failed.

Jumpers:

JP8 can be jumped to reset the microcontroller on the PCB.

JP11 can be jumped to lock the keyboard.

JP21 disables the power fail alarm if only two power supplies are used.

Headers:

JP10 connects to the SCA backplane to sense for overheating.

Fan Power Override Switch: Turn this switch ON to manually supply power to the system fans. The default setting for this switch is OFF. The system cooling fans normally run at 80% of their maximum RPM to allow for this backup compensation and promote fan life. Turning the fan power override switch to ON overrides the 80% RPM feature to make all fans run at their 100% RPM rate. The microcontroller will continue to monitor for fan fail when this switch is turned on. You should do this if you want to supply maximum cooling to the system or if the microcontroller malfunctions.

6-3 System Fans

Four 9-cm hot-swap system cooling fans are located side by side between the motherboard bay and the front chassis section. There are also two 9-cm exhaust fans, which are located at the back of the chassis to pull the cool intake air through the system and force hot air out.

System Fan Failure

Under normal operation, all six system fans run at 80% of their maximum speed, which supplies sufficient airflow while prolonging fan life. If any fan fails, the rest will automatically increase their RPM to a full 100% to compensate. An audible alarm and an LED on the front control panel will notify you of any fan failure. You can disable the alarm with the alarm button on the control panel. The system cooling fans are hot-swap components, which allows you to replace them without powering down the system.

Identifying the failed fan

To determine which fan has failed, first remove the chassis top cover. You can then check the fan fail LEDs on the control panel's printed circuit board (PCB), which can be viewed through a cutout on its protective metal cover. See the designation written by the red illuminated LED on the PCB to determine which fan has failed (Figure 6-2). After determining whether it is a cooling or an exhaust fan and the fan number (position), you should then refer to the following two sections for replacement.

Replacing System Cooling Fans

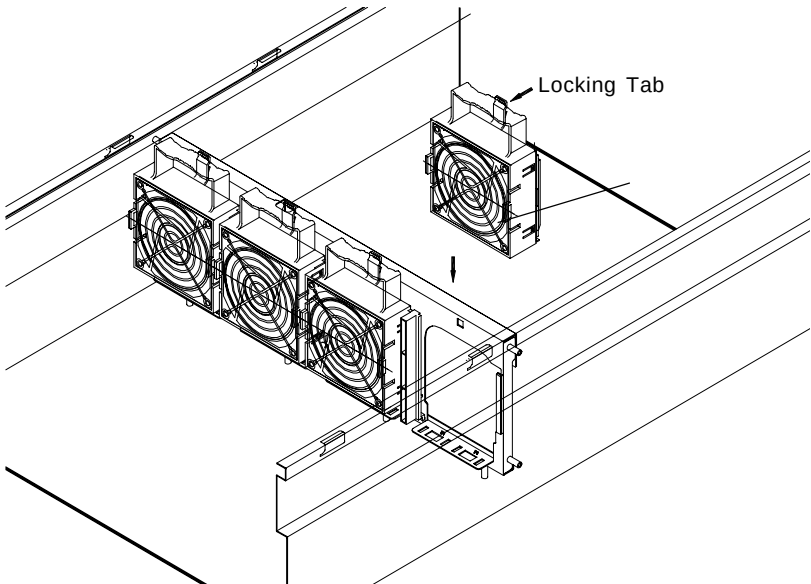
1. Removing a system cooling fan:

With the chassis cover removed, first unplug the fan cable corresponding to the failed fan. Then remove the fan housing from the chassis by depressing the locking tab and pulling the unit straight up (see Figure 6-3). Take apart the fan housing to remove the fan from inside.

2. Installing a new system cooling fan:

Replace the failed fan with an identical 9-cm, 12 volt fan (available from Supermicro). After the new fan has been installed, reassemble the fan housing and plug the housing back into its slot. You should hear it click into place when fully inserted. Then plug the fan cable back into the header on the circuit board you removed it from. You should then wind the excess cable around the tabs on the fan housing to keep it out of the way. Check that the fan is working properly and that the LEDs on the control panel circuit board (Figure 6-2) and the front control panel have turned off. Finish by replacing the top panel of the chassis.

Figure 6-3. System Cooling Fan Removal



Replacing System Exhaust Fans

1. Removing a hot-plug fan housing:

With the chassis cover removed, first unplug the fan cable corresponding to the failed fan. Next, push down on the locking tabs at the top and bottom of the fan housing, which protrude through the back end of the chassis. This will detach the housing from the chassis. Reach inside the chassis and pull the housing out of its hole in the chassis. Unscrew the four screws that hold the fan in the housing to remove the bad fan.

2. Installing a new system fan:

Replace the failed fan with an identical 9-cm, 12 volt fan (available from Supermicro). After the new fan has been inserted, reassemble the fan housing. To put it back in the chassis, first insert the bottom fan housing tab into its hole, then swing the top of the fan toward the chassis, pushing down on the top fan housing tab to insert it into the corresponding hole in the chassis. You should hear it click into place when fully inserted. Finish by plugging the fan cable back into the power connector you detached it from. Check that the fan is working properly and that the LEDs on the control panel circuit board (Figure 6-2) and the front control panel have turned off. Finish by replacing the top panel of the chassis.

6-4 Drive Bay Installation/Removal

Accessing the Drive Bays

SCSI Drives: You do not need to access the inside of the chassis to replace or swap SCSI drives. Proceed to the next step for instructions.

Note: You must use standard 1" high, 80-pin SCA SCSI drives in the SuperServer 8060.

CD-ROM/Floppy Disk Drive: For installing/removing the CD-ROM or floppy disk drive, you will need to gain access to the inside of the 8060 by removing the top cover of the chassis. Proceed to the "CD-ROM and Floppy Drive Installation" section later in this chapter for instructions.

Note: Only a "slim" CD-ROM drive will fit in the 8060.

SCSI Drive Installation

1. Mounting a SCSI drive in a drive carrier:

The SCSI drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the SCSI drive bays. For this reason, even empty carriers without SCSI drives installed must remain in the chassis. To add a new SCSI drive, install a drive into the carrier with the printed circuit board side toward the carrier so that the mounting holes align with those in the carrier. Secure the drive to the carrier with four screws, as shown in Figure 6-4.

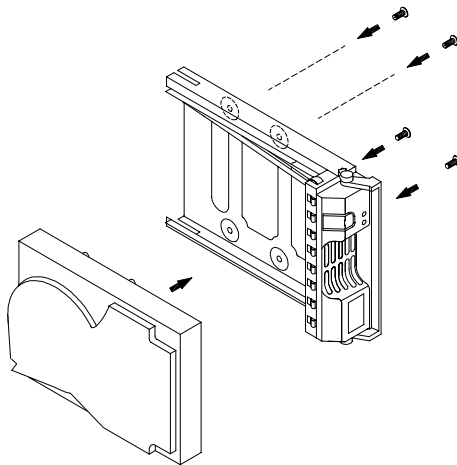


Figure 6-4. Mounting a SCSI Drive in a Carrier



Use caution when working around the SCSI backplane. Do not touch the backplane with any metal objects and make sure no ribbon cables touch the backplane or obstruct the holes, which aid in proper airflow.



Important: Regardless of how many SCSI hard drives are installed, all 4 SCSI drive carriers must remain in the drive bays for proper airflow.

2. Installing/removing hot-swap SCSI drives:

Four SCSI drive bays are located in the front of the chassis, making them easily accesible to install and remove. The SCSI drives can be removed and installed without powering down the system (hot-swap). To remove, first push the release button located beside the drive LEDs, then swing the burgundy colored handle fully out and use it to pull the unit straight out (see Figure 6-5). **Note: Your Operating System must have RAID support to enable the hot-plug capability of the SCSI drives.**

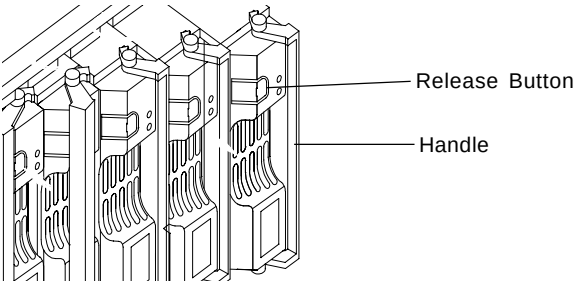
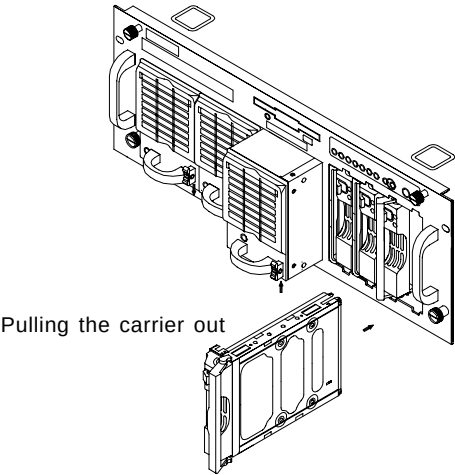


Figure 6-5. Removing SCSI Drives



Important: Regardless of how many SCSI hard drives are installed, all 4 SCSI drive carriers must remain in the drive bays to maintain proper airflow.

SCSI Power Cables

SCSI power cables should be routed in such a way that they do not block the airflow through the chassis. There is a 4-pin connector for the power cables. Connect the connector to the SCA SCSI backplane as noted in Step 3 ("Configuring the hot-plug SCSI drives").

SCA Backplane

The SCSI drives plug into a SAF-TE compliant SCA backplane that provide power and bus termination. A RAID controller can be used with the SCA backplane to provide data security. The operating system you use must have RAID support to enable the hot-swap capability of the SCSI drives. All the jumpers on the SCA backplane are preset and should not be changed. See Figure 6-6.

Overheat Warning Header
(Connects to Control Panel)

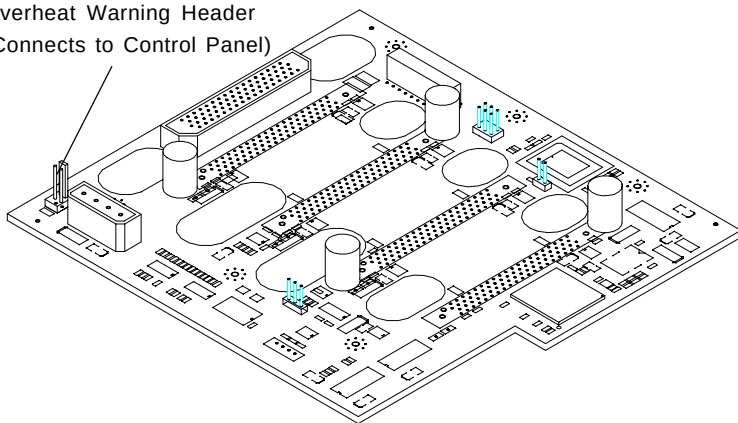


Figure 6-6. SCA Backplane



Use caution when working around the SCA backplane. Do not touch the backplane with any metal objects and make sure no ribbon cables touch the backplane or obstruct the holes, which aid in proper airflow.

CD-ROM and Floppy Drive Installation

The top cover of the chassis must be opened to gain full access to the CD-ROM and floppy drive bays. The CD-ROM drive must have a "slim" profile to fit into the 8060.

First, release the two retention screws that secure the unit to the rack. Next, release the two screws that secure the top cover to the chassis. Grasp the two handles on either side and pull the unit straight out. There are two square recesses in the top cover to help you push the cover away from you until it stops. You can then remove the top cover from the chassis. You must power down the system before installing or removing floppy or IDE drives.

Drives mount on rails and should "click" into place to be correctly and fully installed in their bays. You should keep the metal shields in place on any unused drives to reduce EMI and noise and to facilitate the airflow inside the chassis.

- The floppy disk drive cable has seven twisted wires.
- A red mark on a wire typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

6-5 Power Supply Units

The SC860 has a triple redundant power supply that consists of three separate 300 watt units. Two units provide a continuous 600 watts of power to the system and the third acts as a backup, which will automatically activate if one of the other two units fail. (The backup unit is automatically determined and controlled by the power supply backplane.) All three are hot-plug units, allowing you to replace failed units without powering down the system. These power supply units also have an auto-switching capability, which enables them to automatically sense and operate with either 110 or 220 volt inputs.

Power Supply Failure

If any one of the three power units fails, the backup unit will automatically power up and enable the system to continue operating without interruption. An audible alarm will notify you of a power unit failure, which you can disable by pressing the alarm switch on the chassis control panel. The PWR Fail LED will also illuminate and remain on until the failed unit has been replaced.

Replacing Power Units

1. Identifying the failed power unit:

Inspect the power units mounted in the front of the chassis. The unit with the illuminated red LED indicates the failed unit and should be replaced as soon as possible. Or, if the LED is neither red or green, check to make sure all three power cables are all fully plugged into the back of the chassis. If they are, the power unit is probably bad.

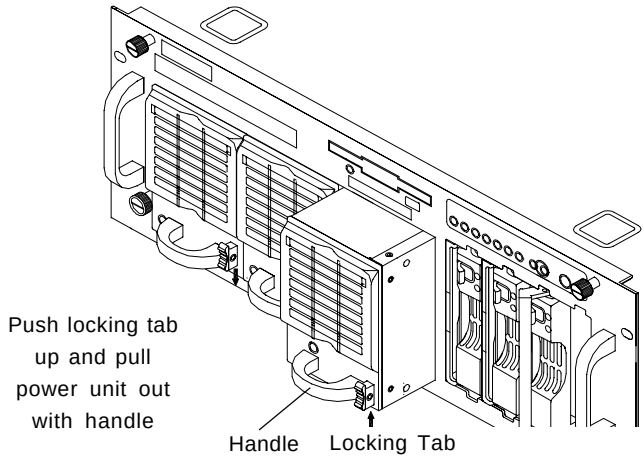
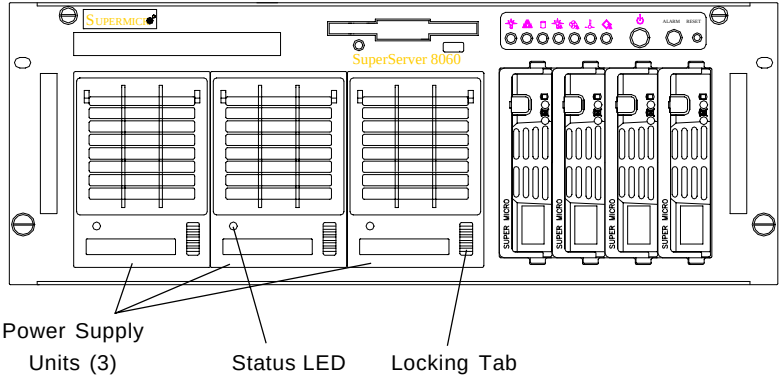
2. Removing a hot-plug power unit: (See Figure 6-7)

You do not need to power down the system to replace a failed power unit. To remove the failed power unit, push the locking tab on the failed unit up, then grasp the handle and pull the unit completely out. You don't need to unplug the power cable from the back of the chassis.

3. Installing a new hot-plug power unit:

Replace the failed unit with another unit of the same wattage. It is highly recommended that all three power units are exactly the same. Gently but firmly push the new unit all the way into the open bay. Secure it by pushing the locking tab downward. The green LED on the power supply unit should illuminate to show that it has power and is operational.

Figure 6-7. Power Supplies



Chapter 7

BIOS/Setup

7-1 Introduction

This chapter describes the AMIBIOS Setup Utility that is used in the Super-Server 8060. The AMI ROM BIOS is stored in a Flash EEPROM and can be easily upgraded using a floppy disk-based program.

Note: Due to periodic changes to BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Refer to the Manual Download area of our web site for any changes to BIOS that are not reflected in this manual.

System BIOS

The BIOS is the Basic Input Output System used in all IBM® PC, XT™, AT®, and PS/2® compatible computers. The BIOS ROM stores the system parameters, such as amount of memory, type of disk drives and video displays, etc. BIOS ROM requires very little power. When the computer is turned off, a back-up battery provides power to the BIOS ROM, enabling it to retain the system parameters. Each time the computer is powered-on, the computer is then configured with the values stored in the BIOS ROM by the system BIOS, which gains control when the computer is powered on.

How To Change the Configuration Data

The configuration data that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing <Delete> at the appropriate time during system boot.

Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Chipset and Power menus. Section 7-3 gives detailed descriptions of each parameter setting in the Setup utility.

An AMIBIOS identification string is displayed at the left bottom corner of the screen, below the copyright message.

7-2 BIOS Features

- Supports Plug and Play V1.0A and DMI 2.3
- Supports Intel PCI 2.2 (Peripheral Component Interconnect) local bus specification
- Supports Advanced Power Management (APM) specification v 1.1
- Supports ACPI
- Supports Flash ROM

AMIBIOS supports the LS120/zip drive:

- Can be used as a boot device
- Is accessible as the next available floppy drive

AMIBIOS supports PC Health Monitoring chips. When a failure occurs in a monitored activity, AMIBIOS can sound an alarm and display a message. The PC Health Monitoring chips monitor:

- Four CPU temperatures
- System Overheat
- Chassis intrusion
- Four positive voltage inputs
- Four fan-speed monitor inputs

7-3 Running Setup

**Optimal default settings are in bold text unless otherwise noted.*

The BIOS setup options described in this section are selected by choosing the appropriate text from the Standard Setup screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options (see on next page).

AMIBIOS HIFLEX SETUP UTILITY VERSION 1.18

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STANDARD CMOS SETUP
 ADVANCED CMOS SETUP
 ADVANCED CHIPSET SETUP
 POWER MANAGEMENT SETUP
 PCI / PLUG AND PLAY SETUP
 PERIPHERAL SETUP
 AUTO-DETECT HARD DISKS
 CHANGE USER PASSWORD
 CHANGE SUPERVISOR PASSWORD
 CHANGE LANGUAGE SETTING
 AUTO CONFIGURATION WITH OPTIMAL SETTINGS
 AUTO CONFIGURATION WITH FAIL-SAFE SETTINGS
 SAVE SETTINGS AND EXIT
 EXIT WITHOUT SAVING

Standard CMOS setup for changing time, date, hard disk type, etc.

Esc:Exit ↑↓:Sel F2/F3:Color F10:Save & Exit

AMIBIOS SETUP-STANDARD CMOS SETUP

(C)1998 American Megatrends, Inc. All Rights Reserved

Date mm/dd/yyyy):Thurs March 2,2000 Base Memory: 640KB
 Time (hh/mm/ss) :16:05:13 Extd Memory: 127MB

Floppy Drive A: 1.44MB 3½
 Floppy Drive B: Not Installed

						LBA	Blk	PIO	32Bit
Type	Size	Cyln	Head	Wpcom	Sec	Mode	Mode	Mode	Mode

Pri Master: Auto
 Pri Slave: Not Installed
 Sec Master: Not Installed
 Sec Slave: Not Installed

Boot Sector Virus Protection Disabled

Month: Jan-Dec
 Day: 01 - 31
 Year: 1901 - 2099

ESC:Exit ↑↓:Sel
 PgUp/PgDn:Modify
 F2/F3:Color

Standard CMOS Setup

Date and Time Configuration

Select the Standard option. Select the *Date/Time* icon. The current values for each category are displayed. Enter new values through the keyboard.

Floppy A

Floppy B

Choose the Floppy Drive A or B icon to specify the floppy drive type. The settings are *Not Installed*, *360 KB 5¼ inch*, *1.2 MB 5¼ inch*, *720 KB 3½ inch*, *1.44 MB 3½ inch* or *2.88 MB 3½ inch*. **Note: The Optimal and Fail-Safe settings for Floppy Drive A are 1.44 MB 3 1/2 inch and for Floppy Drive B are Not Installed.**

Pri Master

Pri Slave

Sec Master

Sec Slave

Type

How to Configure

Type

Select *Type*. The options are *1-46*, *User*, *Auto*, *CDROM*, *ARMD*. *1-46* indicates the predefined type of the parameters. Select *Enter* to enter the parameter type manually. If *Auto* is selected, the parameter type will be set automatically on each boot. Select *CDROM* when ATAPI CDROM drives are used. Select *ARMD* if LS120, MO, Iomega Zip drives are used, or Press *enter* to let the BIOS autodetect the parameter type.

Entering Drive Parameters

You can also enter the hard disk drive parameters. The drive parameters are:

Parameter	Description
Type	The number for a drive with certain identification parameters.
Cylinders	The number of cylinders in the disk drive.
Heads	The number of heads.
WPCOM	The size of a sector gets progressively smaller as the track diameter diminishes. Yet each sector must still hold 512 bytes. WPCOM circuitry on the hard disk compensates for the physical difference in sector size by boosting the write current for sectors on inner tracks. This parameter is the track number where WPCOM begins.
Sectors	The number of sectors per track. MFM drives have 17 sectors per track. RLL drives have 26 sectors per track. ESDI drives have 34 sectors per track. SCSI and IDE drive may have even more sectors per track.

Boot Sector Virus Protection

This setting allows you to prevent any data from being written the boot sector of the hard drive. While this may prevent viruses from infecting your system, you may need to change information here when installing new programs. The options for this setting are *Enabled* or ***Disabled***.

Advanced CMOS Setup

Quick Boot

The options are ***Disabled*** and *Enabled*. Set to *Enabled* to permit AMIBIOS to boot quickly when the computer is powered on. This option replaces the old Above 1 MB Memory Test Advanced Setup option. The settings are:

Setting	Description
<i>Disabled</i>	AMIBIOS tests all system memory. AMIBIOS waits up to 40 seconds for a READY signal from the IDE hard disk drive. AMIBIOS waits for .5 seconds after sending a RESET signal to the IDE drive to allow the IDE drive time to get ready again. AMIBIOS checks for a <Del> key press and runs AMIBIOS setup if the key has been pressed.

Enabled AMIBIOS does not test system memory above 1 MB. AMIBIOS does not wait up to 40 seconds for a READY signal from the IDE hard disk drive. If a READY signal is not received immediately from the IDE drive, AMIBIOS does not configure that drive. AMIBIOS does not wait for .5 seconds after sending a RESET signal to the IDE drive to allow the IDE drive time to get ready again. In *Enabled*, the keyboard will be bypassed.

Note: *The AMIBIOS Setup can be run at system boot but no display is given.*

Pri Master ARMD Emulated as

Pri Slave ARMD Emulated as

Sec Master ARMD Emulated as

Sec Slave ARMD Emulated as

The options for this setting are **Auto**, *Floppy* and *Hard disk*. If set to Auto, the default emulation type depends on the ARMD drive. The default emulation type is floppy for LS120, Hard Disk for MO and Hard Disk for Iomega Zip.

1st Boot Device

2nd Boot Device

3rd Boot Device

The options for the 1st Boot Device are *Disabled*, *1st IDE-HDD*, *2nd IDE-HDD*, *3rd IDE-HDD*, *4th IDE-HDD*, **Floppy**, *ARMD-FDD*, *ARMD-HDD*, *ATAPI CDROM*, *SCSI*, *Network* and *I₂O*. The options for the 2nd Boot Device are *Disabled*, **1st IDE-HDD**, *2nd IDE-HDD*, *3rd IDE-HDD*, *4th IDE-HDD*, *Floppy*, *ARMD-FDD*, *ARMD-HDD*, *ATAPI CDROM* and *SCSI*. The options for the 3rd Boot Device are *Disabled*, *1st IDE-HDD*, *2nd IDE-HDD*, *3rd IDE-HDD*, *4th IDE-HDD*, *Floppy*, *ARMD-FDD*, *ARMD-HDD* and **ATAPI CDROM**.

1st IDE-HDD, 2nd IDE-HDD, 3rd IDE-HDD and 4th IDE-HDD are the four hard disks that can be installed by the BIOS. 1st IDE-HDD is the first hard disk installed by the BIOS, 2nd IDE-HDD is the second hard disk, and so on. For example, if the system has a hard disk connected to Primary Slave and another hard disk to Secondary Master, then 1st IDE-HDD will be referred to as the hard disk connected to Primary Slave and 2nd IDE-HDD will be referred to as the hard disk connected to the Secondary Master. 3rd IDE-HDD and 4th IDE-HDD are not present. Note that the order of the initialization of the devices connected to the primary and secondary channels are Primary Master first, Primary Slave second, Secondary Master third, and Secondary Slave fourth.

The BIOS will attempt to read the boot record from 1st, 2nd, 3rd and 4th boot device in the selected order until it is successful in reading the booting record. The BIOS will not attempt to boot from any device which is not selected as the boot device.

Try Other Boot Devices

This setting controls the action of the BIOS if all the selected boot devices failed to boot. The settings for this option are **Yes** and **No**. If **Yes** is selected, the BIOS will try to boot from the other boot devices that are present in the setup but not selected if all selected Boot Devices failed to boot. If **No** is selected, the BIOS will not try to boot from the other boot devices when all selected boot devices failed to boot.

Initialize I2O Devices

The options for this setting are **Yes** and **No**. If **Yes** is selected, the BIOS will initialize I2O processor(s), I2O storage devices and provide INT13 support for I2O storage devices. If **No** is selected, the BIOS will not initialize I2O processor(s) and I2O storage devices.

Initial Display Mode

This option determines the display screen with which the POST is going to start the display. The options for this setting are **BIOS** and **Silent**. If selected as **BIOS**, the POST will start with the normal sign-on message screen. If **Silent** is selected, the POST will start with the Supermicro screen.

Display Mode at Add-On ROM Init

The options for this setting are **Force BIOS** and **Keep Current**. If **Force Bios** is selected, the Add-on ROM will take control of the POST screen.

Floppy Access Control

The options for this setting are **Read-Write** and **Read-Only**. This option will be effective only if the device is accessed through BIOS.

Hard Disk Access Control

The options for this setting are **Read-Write** and **Read-Only**. This option will be effective only if the device is accessed through BIOS.

S.M.A.R.T. for Hard Disks

S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) is a technology developed to manage the reliability of the hard disk by predicting future device failures. The hard disk needs to be S.M.A.R.T. capable. The options for this setting are **Disabled** and **Enabled**. Note: **S.M.A.R.T. cannot predict all future device failures**. S.M.A.R.T. should be used as a warning tool, not as a tool to predict the device reliability.

Boot Up Num-Lock

The options for this setting are **On** and **Off**. When this option is set to **On**, the BIOS turns off the Num Lock key when the system is powered on. This will enable the end user to use the arrow keys on both the numeric keypad and the keyboard.

PS/2 Mouse Support

The options for this setting are **Enabled** and **Disabled**. When this option is set to **Enabled**, AMIBIOS supports a PS/2-type mouse.

Primary Display

The options for this setting are **Absent**, **VGA/EGA**, **CGA 40x25**, **CGA 80x25** and **Mono**.

Password Check

This setting enables the password check option every time the system boots or the end user runs WinBIOS Setup. If **Always** is chosen, a user password prompt appears every time the computer is turned on. If **Setup** is chosen, the password prompt appears if WinBIOS Setup is executed.

Boot to OS/2

If DRAM size is over 64 MB, set this option to **Yes** to permit AMIBIOS to run with IBM OS/2. The options are **No** and **Yes**.

Processor Serial Number

Intel included a serial number in their Pentium III and Pentium III Xeon processors as a unique system identifier. Select **Enabled** to allow the processor's serial number to be detected by application software programs. For privacy reasons, you can disable the release of this identifier. The options for this setting are **Enabled** and **Disabled**.

CPU Microcode Updation

This option allows the BIOS to update the CPU Microcode. The options for this setting are **Disabled** and **Enabled**.

Internal Cache (L1 Cache)

This option is for enabling or disabling the internal cache memory. The options for this setting are **Disabled**, **WriteThru** and **WriteBack**.

External Cache (L2 Cache)

This option is for enabling or disabling the external cache memory. The options for this setting are **Disabled**, **WriteThru** and **WriteBack**.

System BIOS Cacheable

When set to *Enabled*, the contents of the F0000h system memory segment can be read from or written to cache memory. The contents of this memory segment are always copied from the BIOS ROM to system *setting is Disabled*. ***Set this option to Enabled to permit the contents of F0000h RAM memory segment to be written to and read from cache memory.***

C000 Shadow (16K) (Cached)

C400 Shadow (16K) (Cached)

C800 Shadow (16K) (Cached)

CC00 Shadow (16K) (Cached)

D000 Shadow (16K)

D400 Shadow (16K)

D800 Shadow (16K)

DC00 Shadow (16K)

These settings specify how the 16 KB of video ROM at C0000h (or D0000h) is treated. The options are: *Disabled*, *Enabled* and *Cached*. The default is *Disabled* for all settings except C000, C400, C800, CC00 which are *Cached* for default. When set to *Disabled*, the contents of the video ROM are not copied to RAM. When set to *Enabled*, the contents of the video ROM area from C0000h-CFFFFh (or D0000h-D7FFFh) are copied (shadowed) from ROM to RAM for faster execution. When set to *Cached*, the contents of the video ROM area from C0000h-C7FFFh (or D0000h-D7FFFh) are copied from ROM to RAM, and can be written to or read from cache memory.

Advanced Chipset Setup

USB Function

The options for this setting are ***Enabled*** and *Disabled*. Set this option to *Enabled* to enable the USB (Universal Serial Bus) functions.

USB KB/Mouse Legacy Support

The options for this setting are *Keyboard*, *Auto*, *Keyboard+Mouse* and ***Disabled***.

Port 64/60 Emulation

The options for this setting are ***Enabled*** and *Disabled*.

Write Combining for P6-to-PCI:

The options for this setting are **Enabled** and *Disabled*. This bit enables or disables the combining (bursting) of accesses within the PCI memory regions. The BWCR register provides the write combining enable/disable bit for each region. This bit acts as a master bit to enable the write combining for all the regions.

The main memory system of the CNB30 supports various clock speeds and memory speeds. The MTCR (Memory Timing Control Register) dictates the memory controller to generate the DRAM timing accordingly.

Act to Deact

The options for this setting are **6CLKS** and *5CLKS*.

Act to Read/Write

The options for this setting are **3CLKS** and *2CLKS*.

RAS Precharge Time

This setting defines the RAS Precharge Time. The options are **3 CLKS**, and *2 CLKS*.

RAS Cycle Time

This option defines the RA Cycle Time. The options are *10CLKS*, *9CLKS*, **8CLKS**, and *7CLKS*.

Write to Deact

The options for this setting are **3CLKS** and *2CLKS*.

SDRAM CAS Latency

The options for this setting are **CAS Latency3** and *CAS Latency2*.

Memory Auto Precharge

The options for this setting are **Enabled** and *Disabled*.

SDRAM Fast Timing

The options for this setting are **10-1-1-1** and *11-1-1-1*. When the value set to 10-1-1-1, the CNB30 drives the CAS# signal one clock earlier and reduces the lead time of a page hit read by one clock.

Memory Write Posting

The options for this setting are **Enabled** and *Disabled*.

ISA IO Cycle Delay

The options for this setting are *Full*, **1.5 BCLK**, *2.5 BCLK* and *3.5 BCLK*.

Scrubbing Enable

The options for this setting are *Disabled* and **Enabled**. Set "Enabled" to allow the CNB30 to perform "scrubbing"(-i.e. writing the ECC corrected memory data back to the DRAM).

MPS Support

The options for this setting are **Enabled** and *Disabled*. Select "Enabled" to activate Multi-Processor System Support.

Power Management

ACPI Aware O/S

The options for this setting are *No* and **Yes**. Available with ACPI only. The operating system has the built-in ACPI features. Select "Yes" to permit the OS to detect the ACPI functions in the system.

Power Management/APM

The options for this setting are *Enabled* and **Disabled**. If "Enabled" is selected, the Power Management/Advanced Power Management mode will be activated.

Video Power Down Mode

When in the AMP mode, this option specifies the power conserving state that the VGA video subsystem enters after the specified period of display inactivity has expired. The options are **Disabled** and *Suspend*. **Note:** *The Optimal default setting for this option is Suspend and the Fail-Safe default setting is Disabled.*

Hard Disk Power Down Mode

When in the AMP mode, this option specifies the power conserving state that the hard disk drive enters after the specified period of hard drive inactivity has expired. The options are *Disabled* and **Suspend**. **Note:** *The Optimal default setting for this option is Suspend and the Fail-Safe default setting is Disabled.*

Hard Disk Time Out (Minutes)

When in the AMP mode, this option specifies the length of a period of hard disk drive inactivity. When this length of time expires, the computer

enters the power-conserving state specified in the Hard Disk Power Down Mode option. The options are **Disabled** and *1 Min* through *14 Min* in 1 minute increments.

Suspend Time Out

When in the AMP mode, this option specifies the length of a period of system inactivity while in the suspend state. When this length of time expires, the computer enters a suspend power. The options are *Disabled* and *1 Min* through *14 Min* in 1 minute increments. The default setting is **5**.

Power Button Enable

When in the AMP mode, this in the AMP mode, this option specifies how the power button mounted externally on the computer chassis is used. The options are: *Suspend*, *PowerOn* and **PowerOff**. When set to *PowerOn* or *PowerOff*, pushing the power button turns the computer on or off. The *Suspend* setting places the computer in Suspend mode or Full On power mode.

The BIOS has the capability to detect the IRQ events. When the BIOS detects an IRQ trigger event being activated, then, the system will "wake up" and resumes its activities.

IRQ1

The options are: *Ignore* and **Monitor**.

IRQ3

The options are: **Ignore** and *Monitor*.

IRQ4

The options are: **Ignore** and *Monitor*.

IRQ5

The options are: **Ignore** and *Monitor*.

IRQ6

The options are: **Ignore** and *Monitor*.

IRQ7

The options are: **Ignore** and *Monitor*.

IRQ9

The options are: **Ignore** and *Monitor*.

IRQ10

The options are: *Ignore* and *Monitor*.

IRQ11

The options are: *Ignore* and *Monitor*.

IRQ12

The options are: *Ignore* and *Monitor*.

IRQ14

The options are: *Ignore* and *Monitor*.

IRQ15

The options are: *Ignore* and *Monitor*.

USB Resume

When in the AMP mode, this setting allows you to wake up the system from a USB device. The options for this setting are *Enabled* and *Disabled*.

PME Resume

When in the AMP mode, this option allows you to wake up the system from a PME device. The options for this setting are *Enabled* and *Disabled*.

R1 Resume

When in the AMP mode, this option allows you to wake up the system from a R1 device. The options for this setting are *Enabled* and *Disabled*.

PCI/Plug and Play Setup**Plug and Play-Aware OS**

The options for this setting are **No** and Yes. Set this option to Yes to allow the operating system to detect ISA Plug and Play devices. (Since the S2QR6 has no ISA slots, this should always be set to **No**.)

PCI Latency Timer (PCI Clocks)

This setting specifies the latency timings in PCI clocks for all PCI devices. The options are 32, **64**, 96, 128, 160, 192, 224, and 248.

PCI VGA Palette Snoop

The options for this setting are **Disabled** and **Enabled**. When set to Enabled, multiple VGA devices operating on different buses can handle data from the CPU on each set of palette registers on every video device. Bit 5 of the command register in the PCI device configuration space is the VGA Palette Snoop bit (0 is disabled). For example, if there are two VGA devices in the computer (one PCI and one ISA) and this option is disabled, data read and written by the CPU is only directed to the PCI VGA device's palette registers. If Enabled, data read and written by the CPU is directed to both the PCI VGA device's palette registers and the ISA VGA palette registers. This will permit the palette registers of both devices to be identical. This option must be set to Enabled if any ISA adapter card installed in the system requires VGA palette snooping.

PCI IDE Busmaster

The options for this setting are **Disabled** and **Enabled**. Set to Enabled to specify the IDE Controller on the PCI bus has bus mastering capabilities. Under Windows 95/98/2000/NT and OS/2, you should set this option to Disabled and install the Bus Mastering driver.

Offboard PCI IDE Card

This setting specifies if an offboard PCI IDE controller adapter card is installed in the computer. The PCI expansion slot on the motherboard where the offboard PCI IDE controller is installed must be specified. If an offboard PCI IDE controller is used, the onboard IDE controller is automatically disabled. The options are **Auto** (AMIBIOS automatically determines where the offboard PCI IDE controller adapter card is installed), **Slot 1**, **Slot 2**, **Slot 3**, **Slot 4**, **Slot 5** and **Slot 6**.

This setting forces IRQ14 and IRQ15 to a PCI slot on the PCI local bus. This is necessary to support non-compliant ISA IDE controller adapter cards. If an offboard PCI IDE controller adapter card is installed in the computer, you must also set the Offboard PCI IDE Primary IRQ and Offboard PCI IDE Secondary IRQ options.

Offboard PCI IDE Primary IRQ

Offboard PCI IDE Secondary IRQ

These settings specify the PCI interrupt used by the primary (or secondary) IDE channel on the offboard PCI IDE controller. The options are **Disabled**, **Hardwired**, **INTA**, **INTB**, **INTC** and **INTD**.

Onboard USB IRQ

Use this setting to specify the IRQ priority for Onboard USB devices installed in the PCI expansion slots. The options are **Auto**, (IRQ) 3, 4, 5, 7, 9, 10, and 11, in priority order.

PCI Slot 1 and Slot 2 IRQ

Use these settings to specify the IRQ priority for PCI devices installed in the PCI expansion slots. The options are **Auto**, (IRQ) 3, 4, 5, 7, 9, 10, and 11, in priority order.

Onboard LAN IRQ

Use this setting to specify the IRQ priority for Onboard LAN devices installed in the PCI expansion slots. The options are **Auto**, (IRQ) 3, 4, 5, 7, 9, 10, and 11, in priority order.

PCI Slot 3 and Onboard SCSI IRQ

Use this setting to specify the IRQ priority for PCI Slot 3 and Onboard SCSI devices installed in the PCI expansion slots. The options are **Auto**, (IRQ) 3, 4, 5, 7, 9, 10, and 11, in priority order.

PCI Slot 4 IRQ**PCI Slot 5 IRQ****PCI Slot 6 IRQ****PCI Slot 7 IRQ****PCI Slot 8 IRQ**

Use these settings to specify the IRQ priority for PCI devices installed in the PCI expansion slots. The settings are **Auto**, (IRQ) 3, 4, 5, 7, 9, 10, and 11, in priority order.

DMA Channel 0**DMA Channel 1****DMA Channel 3****DMA Channel 5****DMA Channel 6****DMA Channel 7**

These DMA channels control the data transfers between the I/O devices and the system memory. The chipset allows the BIOS to choose which channels to do the job. The options are **PnP** and **ISA/EISA**.

IRQ4**IRQ5****IRQ7****IRQ9**

IRQ10**IRQ11****IRQ14****IRQ15**

These settings specify which bus the specified IRQ line is used on and allow you to reserve IRQs for legacy ISA adapter cards. If more IRQs must be removed from the pool, the end user can use these options to reserve the IRQ by assigning an *ISA/EISA* setting to it. Onboard I/O is configured by AMIBIOS. All IRQs used by onboard I/O are configured as PCI/PnP.

IRQ14 and 15 will not be available if the onboard PCI IDE is enabled. If all IRQs are set to *ISA/EISA* and IRQ14 and 15 are allocated to the onboard PCI IDE, IRQ 9 will still be available for PCI and PnP devices. This is because at least one IRQ must be available for PCI and PnP devices. The options are ***PCI/PnP*** and *ISA/EISA*. (See page 3-5 for information on shared IRQs.)

Reserved Memory Size

This setting specifies the size of the memory area reserved for legacy ISA adapter cards. The options are ***Disabled***, *16K*, *32K* and *64K*.

Reserved Memory Address

This setting specifies the beginning address (in hex) of the reserved memory area. The specified ROM memory area is reserved for use by legacy ISA adapter cards. The options are *C0000*, *C4000*, ***C8000***, *CC000*, *D0000*, *D4000*, *D8000* and *DC000*.

Peripheral Setup**Onboard SCSI**

This setting enables or disables the onboard SCSI. The options are ***Enabled*** and *Disabled*.

CPU1 Current Temperature

The current temperature of CPU1 is displayed here.

CPU2 Current Temperature

The current temperature of CPU2 is displayed here.

CPU3 Current Temperature

The current temperature of CPU3 is displayed here.

CPU4 Current Temperature

The current temperature of CPU2 is displayed here.

System Overheat Warning

The options for this setting are *Enabled* and **Disabled**. When set to *Enabled* the user is given the opportunity to set the overheat warning temperature.

Overheat Warning Temperature

Use this setting to set the CPU overheat warning temperature. The options are 25 °C through 75 °C in 1 °C intervals. **Note: The Optimal and Fail-Safe default settings are 55 °C.**

H/W Monitor CPU1

H/W Monitor CPU2

H/W Monitor CPU3

H/W Monitor CPU4

H/W Monitor (+3.3V)

H/W H/WMonitor (+5V)

H/W Monitor (+12V)

H/W Monitor (+2.5V)

CPU1 Fan

CPU2 Fan

CPU3 Fan

CPU4 Fan

The above features are for PC Health Monitoring. The motherboards with W83781D have seven onboard voltage monitors for the CPU core, CPU I/O, +3.3V, +5V, -5V, +12V, and -12V, and for the four-fan status monitor.

OnBoard FDC

This setting enables the FDC (Floppy Drive Controller) on the motherboard. The options are *Disabled* and **Enabled**.

OnBoard Serial Port1

This setting specifies the base I/O port address of serial port 1. The options are *Disabled*, **3F8h**, **2F8h**, **3E8h** and **2E8h**.

OnBoard Serial Port2

This setting specifies the base I/O port address of serial port 2. The options are *Disabled*, **3F8h**, **2F8h**, **3E8h** and **2E8h**.

Serial Port2 Mode

The options for this setting are **Normal**, *IrDA SIR-A*, *IrDA SIR-B*, *ASKIR*, *Consumer* and *Raw IR*. When set to anything but **Normal**, the IR Duplex Mode becomes available and can be set to either *Half* or **Full**.

Serial Port2 Duplex Mode

This setting is enabled by the selection made in the previous Serial Port 2 Mode setting. This makes the IR Duplex Mode available, which can be set to either *Half* or **Full**.

Onboard Parallel Port

This setting specifies the base I/O port address of the parallel port on the motherboard. The options are *Auto* (AMIBIOS automatically determines the correct base I/O port address), *Disabled*, **378h**, *278h* and *38Ch*.

Parallel Port Mode

This setting specifies the parallel port mode. The options are **Normal**, *Bi-Dir*, *EPP* and **ECP**. When set to **Normal**, the normal parallel port mode is used. Use *Bi-Dir* to support bidirectional transfers. Use *EPP* (Enhanced Parallel Port) to provide asymmetric bidirectional data transfer driven by the host device. Use *ECP* (Extended Capabilities Port) to achieve data transfer rates of up to 2.5 Mbps. ECP uses the DMA protocol and provides symmetric bidirectional communication. **Note: The Optimal default setting for this option is ECP and the Fail-Safe setting is Normal.**

EPP Version

The options are *Enabled* and *Disabled*. **Note: The Optimal and Fail-Safe default settings are N/A.**

Parallel Port IRQ

This setting specifies the IRQ to be used by the parallel port. The options are **5** and **7**.

Parallel Port ECP DMA Channel

This setting is only available if the parallel port mode is set to *ECP*. The options are **0**, **1**, **2**, **3**, **5**, **6** and **7**.

Onboard IDE

This setting enables the IDE (Hard Disk Drive Controller) device(s) on the motherboard. The options are **Enabled** and *Disabled*.

Auto-Detect Hard Disks

This section allows BIOS to look for and configure any hard disk drives on your system. After highlighting this setting, hit <Enter> and wait momentarily while BIOS performs the auto-detect. You will soon see the disk drives appear properly configured.

Change User Password

Change Supervisor Password

The system can be configured so that all users must enter a password every time the system boots or when the AMIBIOS setup is executed. You can set either a Supervisor password or a User password. If you do not want to use a password, just press <Enter> when the password prompt appears.

The password check option is enabled in the Advanced Setup by choosing either *Always* or *Setup*. The password is stored in CMOS RAM. You can enter a password by typing it out on the keyboard or by selecting each letter via the mouse or a pen stylus. Pen access must be customized for each specific hardware platform.

When you select to change the Supervisor or User password, AMIBIOS prompts you for the new password. You must set the Supervisor password before you can set the User password. Enter a 1-6 character password. (It will not appear on the screen when typed.) Retype the new password as prompted and press <Enter>. Make sure you write it down. If you forget it, you must clear CMOS RAM and reset the password.

Change Language Setting

Because this version of BIOS only supports English at this time, this setting cannot be chosen. Future releases may support other languages.

Auto Configuration with Optimal Settings

The Optimal default settings provide optimum performance settings for all devices and system features.

Auto Configuration with Fail Safe Settings

The Fail-Safe default settings consist of the safest set of parameters. Use them if the system is behaving erratically. They should always work but do not provide optimal system performance characteristics.

Save Current Settings and Exit

Highlight this and hit <Enter> when you wish to save any changes made to settings in BIOS and exit back to the system boot-up procedure.

Exit Without Saving

Highlight this and hit <Enter> when you wish to exit back to the system boot-up procedure without saving any changes.

Appendix A

BIOS Error Beep Codes & Messages

During the POST (Power-On Self-Test) routines, which are performed each time the system is powered on, errors may occur.

Non-fatal errors are those which, in most cases, allow the system to continue the boot-up process. The error messages normally appear on the screen.

Fatal errors are those which will not allow the system to continue the boot-up procedure. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps. The numbers on the fatal error list, on the following page, correspond to the number of beeps for the corresponding error. All errors listed, with the exception of Beep Code 8, are fatal errors.

AMI BIOS Error Beep Codes

1 beep: System needs to update BIOS. Insert the diskette in that has the system BIOS file (SUPER.ROM) in the root directory.

2 beeps: BIOS file (SUPER.ROM) absent or not in root directory.

4 beeps: Flash program successful.

5 beeps: Floppy read error.

7 beeps: No flash part detected. The BIOS cannot be updated.

8 beeps: The ROM checksum value does not match the value encoded in the BIOS.

10 beeps: Flash erase error.

11 beeps: Flash program error.

12 beeps: Wrong BIOS file size.

13 beeps: ROM image mismatch.

If you hear...	it's because...
5 short and 1 long beeps	no memory is installed
6 short and 1 long beeps	EDO memory detected
7 short and 1 long beeps	SMBUS (System Management Bus) error

Notes

Appendix B

AMIBIOS POST Diagnostic Error Messages

This section describes the power-on self-tests (POST) port 80 codes for the AMIBIOS.

Check**Point****Description**

00	Code copying to specific areas is done. Passing control to INT 19h boot loader next.
03	NMI is Disabled. Next, checking for a soft reset or a power-on condition.
05	The BIOS stack has been built. Next, disabling cache memory.
06	Uncompressing the post code unit next.
07	Next, initializing the CPU init and the CPU data area.
08	The CMOS checksum calculation is done next.
0B	Next, performing any required initialization before keyboard BAT command is issued.
0C	The keyboard controller I/B is free. Next, issuing the BAT command to the keyboard controller.
0E	The keyboard controller BAT command result has been verified. Next, performing any necessary initialization after the keyboard controller BAT command test.
0F	The initialization after the keyboard controller BAT command test is done. The keyboard command byte is written next.

Check Point	<u>Description</u>
10	The keyboard controller command byte is written. Next, issuing the pin 23 and 24 blocking and unblocking commands.
11	Next, checking if the <End or <Ins> keys were pressed during power on. Initializing CMOS RAM if the Initialize CMOS RAM in every boot AMIBIOS POST option was set in AMIBCP or the <End> key was pressed.
12	Next, disabling DMA controllers 1 and 2 and interrupt controllers 1 and 2.
13	The video display has been disabled. Port B has been initialized. Next, initializing the chipset.
14	The 8254 timer test will begin next.
19	The 8254 timer test is over. Starting the memory refresh test next.
1A	The memory refresh test line is toggling. Checking the 15 second on/off time next.
23	Reading the 8042 input port and disabling the MEGAKEY Green PC feature next. Making the BIOS code segment writable and performing any necessary configuration before initializing the interrupt vectors.
24	The configuration required before interrupt vector initialization has completed. Interrupt vector initialization is done. Clearing the password if the POST DIAG switch is on.
25	Interrupt vector initialization is done. Clearing the password if the POST DIAG Switch is on.
27	Any initialization before setting video mode will be done next.

Check Point	<u>Description</u>
28	Initialization before setting the video mode is complete. Configuring the monochrome mode and color mode settings next.
2A	Bus initialization system, static, output devices will be done next, if present.
2B	Passing control to the video ROM to perform any required configuration before the video ROM test.
2C	All necessary processing before passing control to the video ROM is done. Looking for the video ROM next and passing control to it.
2D	The video ROM has returned control to BIOS POST. Performing any required processing after the video ROM had control.
2E	Completed post-video ROM test processing. If the EGA/VGA controller is not found, performing the display memory read/write test next.
2F	The EGA/VGA controller was not found. The display memory read/write test is about to begin.
30	The display memory read/write test passed. Look for retrace checking next.
31	The display memory read/write test or retrace checking failed. Performing the alternate display memory read/write test next.
32	The alternate display memory read/write test passed. Looking for alternate display retrace checking next.
34	Video display checking is over. Setting the display mode next.
37	The display mode is set. Displaying the power on message next.

Check Point	<u>Description</u>
38	Initializing the bus input, IPL, and general devices next, if present.
39	Displaying bus initialization error messages.
3A	The new cursor position has been read and saved. Displaying the Hit <DEL> message next.
40	Preparing the descriptor tables next.
42	The descriptor tables are prepared. Entering protected mode for the memory test next.
43	Entered protected mode. Enabling interrupts for diagnostics mode next.
44	Interrupts enabled if the diagnostics switch is on. Initializing data to check memory wraparound at 0:0 next.
45	Data initialized. Checking for memory wraparound at 0:0 and finding the total system memory size next.
46	The memory wraparound test has completed. The memory size calculation has been completed. Writing patterns to test memory next.
47	The memory pattern has been written to extended memory. Writing patterns to the base 640 KB memory next.
48	Patterns written in base memory. Determining the amount of memory below 1 MB next.
49	The amount of memory below 1 MB has been found and verified. Determining the amount of memory above 1 MB memory next.
4B	The amount of memory above 1 MB has been found and verified. Checking for a soft reset and clearing the memory below 1 MB for the soft reset next. If this is a power on situation, going to checkpoint 4Eh next.

Check Point	Description
4C	The memory below 1 MB has been cleared via a soft reset. Clearing the memory above 1 MB next.
4D	The memory above 1 MB has been cleared via a soft reset. Saving the memory size next. Going to checkpoint 52h next.
4E	The memory test started, but not as the result of a soft reset. Displaying the first 64 KB memory size next.
4F	The memory size display has started. The display is updated during the memory test. Performing the sequential and random memory test next.
50	The memory below 1 MB has been tested and initialized. Adjusting the displayed memory size for relocation and shadowing next.
51	The memory size display was adjusted for relocation and shadowing. Testing the memory above 1 MB next.
52	The memory above 1 MB has been tested and initialized. Saving the memory size information next.
53	The memory size information and the CPU registers are saved. Entering real mode next.
54	Shutdown was successful. The CPU is in real mode. Disabling the Gate A20 line, parity, and the NMI next.
57	The A20 address line, parity, and the NMI are disabled. Adjusting the memory size depending on relocation and shadowing next.
58	The memory size was adjusted for relocation and shadowing. Clearing the Hit <DEL> message next.
59	The Hit <DEL> message is cleared. The <WAIT> message is displayed. Starting the DMA and interrupt controller test next.

Check Point	<u>Description</u>
60	The DMA page register test passed. Performing the DMA Controller 1 base register test next.
62	The DMA controller 1 base register test passed. Performing the DMA controller 2 base register test next.
65	The DMA controller 2 base register test passed. Programming DMA controllers 1 and 2 next.
66	Completed programming DMA controllers 1 and 2. Initializing the 8259 interrupt controller next.
7F	Extended NMI source enabling is in progress.
80	The keyboard test has started. Clearing the output buffer and checking for stuck keys. Issuing the keyboard reset command next.
81	A keyboard reset error or stuck key was found. Issuing the keyboard controller interface test command next.
82	The keyboard controller interface test completed. Writing the command byte and initializing the circular buffer next.
83	The command byte was written and global data initialization has been completed. Checking for a locked key next.
84	Locked key checking is over. Checking for a memory size mismatch with CMOS RAM data next.
85	The memory size check is done. Displaying a soft error and checking for a password or bypassing WINBIOS Setup next.
86	The password was checked. Performing any required programming before WINBIOS Setup next.

Check Point	Description
87	The programming before WINBIOS Setup has been completed. Uncompressing the WINBIOS Setup code and executing the AMIBIOS Setup or WINBIOS Setup utility next.
88	Returned from WINBIOS Setup and cleared the screen. Performing any necessary programming after WINBIOS Setup next.
89	The programming after WINBIOS Setup has been completed. Displaying the power-on screen message next.
8B	The first screen message has been displayed. The <WAIT...> message is displayed. Performing the PS/2 mouse check and extended BIOS data area allocation check next.
8C	Programming the WINBIOS Setup options next.
8D	The WINBIOS Setup options are programmed. Resetting the hard disk controller next.
8F	The hard disk controller has been reset. Configuring the floppy drive controller next.
91	The floppy drive controller has been configured. Configuring the hard disk drive controller next.
95	Initializing the bus option ROMs from C800 next.
96	Initializing before passing control to the adaptor ROM at C800.
97	Initialization before the C800 adaptor ROM gains control has been completed. The adaptor ROM check is next.
98	The adaptor ROM had control and has now returned control to BIOS POST. Performing any required processing after the option ROM returned control.

Check Point	<u>Description</u>
99	Any initialization required after the option ROM test has been completed. Configuring the timer data area and printer base address next.
9A	Set the timer and printer base addresses. Setting the RS-232 base address next.
9B	Returned after setting the RS-232 base address. Performing any required initialization before the Coprocessor test next.
9C	Required initialization before the Coprocessor test is over. Initializing the Coprocessor next.
9D	Coprocessor initialized. Performing any required initialization after the Coprocessor test next.
9E	Initialization after the Coprocessor test is complete. Checking the extended keyboard, keyboard ID, and Num Lock key next. Issuing the keyboard ID command next.
A2	Displaying any soft errors next.
A3	The soft error display has completed. Setting the keyboard typematic rate next.
A4	The keyboard typematic rate is set. Programming the memory wait states next.
A5	Memory wait state programming is over. Clearing the screen and enabling parity and the NMI next.
A7	NMI and parity enabled. Performing any initialization required before passing control to the adaptor ROM at E000 next.
A8	Initialization before passing control to the adaptor ROM at E000h completed. Passing control to the adaptor ROM at E000h next.

Check Point	Description
A9	Returned from adaptor ROM at E000h control. Next, performing any initialization required after the E000 option ROM had control.
AA	Initialization after E000 option ROM control has completed. Displaying the system configuration next.
AB	Building the multiprocessor table, if necessary. POST next.
B0	The system configuration is displayed.
AC	Uncompressing the DMI data and initializing DMI.
B1	Copying any code to specific areas.
D0h	The NMI is disabled. Power on delay is starting. Next, the initialization code checksum will be verified.
D1h	Initializing the DMA controller. Performing the keyboard controller BAT test. Starting memory refresh, and entering 4 GB flat mode next.
D3h	Starting memory sizing next.
D4h	Returning to real mode. Executing any OEM patches and setting the stack next.
D5h	Passing control to the uncompressed code in shadow RAM at E000:0000h. The initialization code is copied to segment 0 and control will be transferred to segment 0.
D6h	Control is in segment 0. Next, checking if <Ctrl><Home> was pressed and verifying the system BIOS checksum. If either <Ctrl><Home> was pressed or the system BIOS checksum is bad, next the system will go to checkpoint code E0h. Otherwise, going to checkpoint code D7h.

Notes

Appendix C

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Notes

Appendix D

System Specifications

Processors

Up to four Intel Pentium III/II Xeon 400-700 MHz CPUs with a 100 MHz FSB in 1, 2, 3 or 4 way configurations

Memory Capacity

MEC (Memory Expansion Card) with 16 DIMM slots to support a maximum of 16 GB SDRAM

DIMM Sizes

128 MB / 256 MB / 512 MB / 1 GB SDRAM modules supported

SCSI Controller

Adaptec AIC-7899 for dual channel Ultra160 SCSI

SCSI Backplane Controller

QLogic GEM354 controller for SAF-TE compliant SCA backplane

SCSI Drive Bays

Four (4) drive bays to house four (4) standard **1" 80-pin** SCA SCSI drives

Peripheral Bays

One (1) 3.5" floppy drive and one (1) slim CD-ROM drive

PCI Expansion Slots

Two (2) 64-bit, 66 MHz PCI slots

Four (4) 64/32-bit, 33 MHz PCI slots

Power Supply

Type: 3 x 300W triple redundant, hot-plug units with +3.3V, +5V, +12V, -5V and -12V main DC outputs and a 5V standby output.

Input Voltage: 120V or 230V (units are autoswitching capable)

Fans: Each unit has one 80 mm ball bearing fan

Operating Temperature Range: 10 to 40 degrees C

Humidity Range: 5-90%, non-condensing

Safety Regulations: UL 1950, CUL, TUV

EMI: FCC Class A, CISPR 22 Class A

Cooling Fans

System: Four (4) 9-cm, hot-plug ball bearing fans

Exhaust: Two (2) 9-cm ball bearing fans

Onboard Fan Headers: Four CPU, four chassis and two overheat headers; max. current = .035 amps/ea. or 1.2 amps/set of four

Form Factor: S2QE6 motherboard: SWTX
SC860 chassis: 4U rackmount

Operating Systems Supported: Windows NT, Windows 2000, Solaris, Netware, SCO UNIX and Linux

Dimensions: 14.9 x 19.9 x 22.8 in.; 380 x 505 x 580 mm (W x H x D)

Weight: Net: 59.4 lb. (27 kg.); Full System: 74.8 lb. (34 kg.)
Gross: 70.4 lb. (32 kg.); Full System: 85.8 lb. (39 kg.)

Regulations: Class B, FCC, CE, UL, TUV